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ATOMIC-EMISSION-LINE

WAVELENGTH CALCULATIONS

BELOW 2000 ANGSTROMS FOR

LITHIUM II THROUGH

COBALT XXVI

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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Prepared by Langley Research Center



FOREWORD

Although spectroscopists and astrophysicists need predictions of spectral wavelengths, no comprehensive tables of such wavelengths have been published. Rather, there have been many limited and often unpublished calculations of predicted lines. This publication is intended to satisfy, at least partially, the need of these scientists and to reduce the duplication in their efforts.

To a large extent, these predicted wavelengths can be credited to the work of a relatively few people who tirelessly catalog identified wavelengths. It is believed that the feedback of these wavelengths will contribute to the progress of their work.

INTRODUCTION

NRL Report 6648 (ref. 1) lists 9386 spectral emission lines with wavelengths less than 2000 angstroms. Since its publication in February 1968, additional emission lines of some of the same elements have been added and the listing has been extended to include emission lines of all elements through iron. The compilation now contains more than 20 800 emission lines with wavelengths less than 2000 angstroms.

These emission-line wavelengths and various other related information have been punched on cards and were used in a computer program to extrapolate and interpolate wavelengths of unlisted lines. The unlisted wavelengths were calculated according to the theory of isoelectronic sequences (ref. 2) by using a second-degree polynomial which was fitted to known wave numbers (reciprocal wavelengths) according to the method of least squares (ref. 3). The program generated 2513 wavelengths for lines of the following ions: Li II; Be I,III,IV; B I to V; C I to III; N I to IV,VI; O I to III,V; F I to IX; Ne II to VIII; Na II to VIII,X; Mg III to IX; Al I,II,IV,VI to XI; Si I to XII,XIV; P I to XIII,XV; S II to VII,X to XIV; Cl I to VIII,XII to XVI; Ar I,III to VII,IX to XI,XIV,XV; K II to XVI,XIX; Ca III to VII,IX,X,XII; Sc III,V to XV; Ti III to XIII; V III to XV; Cr V,VI,VIII to XIII,XVI; Mn VI,IX to XV,XVII,XXIV; Fe V,VII,X to XII,XIV,XV, XVIII; Co VI to XIX,XXVI. The results of the calculations are compiled in this paper.

SYMBOLS

A,B,C,a,b,c

constants

J	total angular momentum
K	multiple of S_l
N	number of samples
R	Rydberg constant
S	parameter representing screening effect due to core electrons of heavy atoms
\mathbf{s}_{l}	standard deviation based on l
s	azimuthal quantum number

¹Compilation by Raymond L. Kelly, Professor of Physics, U.S. Naval Postgraduate School, Monterey, California.

T term value

Z atomic number

λ wavelength in angstroms

Δλ wavelength error

σ wave number

Subscripts:

i index number

l number of known wavelengths used to calculate a new wavelength

m,n principal quantum numbers

Superscript:

o odd parity

Other notations:

KLAP storage location in computer program

IND index number in computer program

METHOD OF CALCULATION

Basically, the program (see appendix) selects wavelengths of the same transition in isoelectronic ions and uses these wavelengths according to empirical quantum mechanical relations to calculate wavelengths for the same transition in other isoelectronic ions.

The Balmer formula and combination principle express wave number (reciprocal of wavelength) as the difference of two terms:

$$\sigma = \mathbf{T}_{m} - \mathbf{T}_{n} = \frac{1}{\lambda}$$

Terms of multielectron ions are related to atomic number Z according to Moseley's expression,

$$T_m = \frac{R(Z - S)^2}{m^2} = A_m Z^2 + B_m Z + C_m$$

Also,

$$T_n = \frac{R(Z - S)^2}{n^2} = A_n Z^2 + B_n Z + C_n$$

Hence,

$$\sigma = \frac{1}{\lambda} = T_m - T_n = aZ^2 + bZ + c$$

This relation shows that for each transition in an isoelectronic sequence the reciprocal of wavelength (ordinate) could be plotted against atomic number (abscissa). A curve plotted through three or more such points would conform closely to a second-degree polynomial and could be used to interpolate and extrapolate wavelengths for other values of Z (other ions).

The computer, however, performs this task without the use of a plot. It calculates the coefficients of a second-degree polynomial which best fits three or more known coordinates according to the method of least squares. The polynomial, in turn, is used to calculate other wavelengths. Wave numbers calculated by the polynomial have the most probable values that can be obtained from the known data by second-order theory.

A fourth-order term which accounts for spin-orbit interaction and a relativistic correction is not given by this theory and was not included in the calculations because it contributes a relatively small correction. It can, however, be the source of a large extrapolation error or a physically inexplicable term requiring special treatment that is impractical for the quantity of data involved here. (See ref. 4.)

PROCEDURES AND RESULTS

One hundred forty-five different groups of data sections were used. Each group consisted of a data section of an ionized element with a relatively low atomic number followed by four data sections of ionized elements with successively higher atomic numbers in the same isoelectronic sequence. The various groups are identified by the element and ionization number of the first data section and are circled in table I. Use of these groups generates wavelengths from 1.474 angstroms through 1954.897 angstroms for Li II through Co XXVI.

From an ion chart, ¹ such as shown in table I, it is evident that the groups overlap. For example, the F II group contains three of the same data sections as the Na IV group. It also contains one data section which is contained in the Al VI group. It is therefore possible to obtain as many as three slightly different wavelength calculations for the same spectral line. When two or more such calculations were made, the best calculation was determined by considerations such as (1) the number of known wavelengths used in the calculation, (2) the quality of the polynomial fit, (3) whether a known line has questionable data, and (4) comparative intensities and their modifiers. Use of the grouping pattern shown in table I limited the number of duplicate calculations.

Because of variations in the content and/or format of the compiled data (for example, some configurations omit or displace the 1s² notation; others do not), the program also calculated the wavelengths of some lines that were already in the compiled data. A separate computer program was used to identify such lines. These lines were removed from the list of calculated lines and were used to estimate the error of the calculated lines.

Table II consists of the predicted transitions ordered according to increasing atomic number, ionization stage, and wavelength. Table III is divided into two sections. The first section contains wavelengths that were calculated from four known wavelengths. The second section contains wavelengths that were calculated from three known wavelengths. Both sections are ordered according to increasing wavelength. The data of tables II and III are printed in the same format as that described in the appendix (table V) except that columns 16 to 30 and 72 to 80 are not printed.

ERROR

The program calculated the wavelengths of 560 lines that were already contained in the compiled data. The differences between these wavelengths have been used to estimate the error of the calculated lines.

The standard deviation of the new wavelengths that were generated by three known wavelengths was calculated separately from the new wavelengths that were generated by four known wavelengths. The standard deviations were calculated by the following formula:

$$S_{l} = \sqrt{\frac{1}{N-1} \sum_{i=1}^{N} \left(\frac{\Delta \lambda_{i}}{\lambda_{i}^{2}}\right)_{l}^{2}}$$

¹Prepared Oct. 1969 by Professor Raymond L. Kelly and used with his permission.

The standard deviation, S_3 , for those lines generated by three known wavelengths was 8.24×10^{-5} reciprocal angstroms. There were 399 lines used in the calculation. More than 81 percent of the lines had errors smaller than $0.6745S_3$ (the most probable error in a normal distribution); 86 percent had errors smaller than S_3 ; 94 percent had errors smaller than S_3 ; 97.8 percent had errors smaller than S_3 .

The standard deviation, S_4 , for those lines generated by four known wavelengths was 1.88×10^{-5} reciprocal angstroms. There were 161 lines used in the calculation. Of these lines 87 percent had errors smaller than $0.6745S_4$; 92 percent had errors smaller than S_4 ; 97.6 percent had errors smaller than $2S_4$.

An estimate of error in angstroms can be obtained by using the formula

$$\Delta \lambda = K \lambda^2$$

where

K an appropriate multiple of S_1

λ wavelength of calculated line in angstroms

Table IV provides a comparison of computed wavelengths with wavelengths taken from published literature. (See refs. 5 to 10.) Generally, shorter wavelengths have greater accuracy.

CONCLUDING REMARKS

Atomic-emission-line wavelengths have been calculated from the wavelengths of previously identified transitions by using the theory of isoelectronic sequences. The wavelengths were calculated in a computer program which used second-degree polynomials that best fit the respective isoelectronic sequences (according to the method of least squares) that the program formed from known transitions.

All possible wavelength predictions from the known data are not included in this publication. Some predicted wavelengths were involuntarily excluded for the following reasons:

- (1) Extrapolations were limited to two places at most to insure a reasonable error of calculation.
 - (2) The grouping pattern was used for speed and efficiency.

(3) The computer program was unable to recognize identical configurations that used inconsistent notations and/or formats.

The loss of predicted wavelengths due to the last two reasons is estimated to be less than 10 percent.

Langley Research Center,
National Aeronautics and Space Administration,
Hampton, Va., September 22, 1971.

APPENDIX

COMPUTER PROGRAM

The program was written in FORTRAN IV language. The following description of its input, operation, and output follows the program sequence closely.

Listed in table V, the first line represents the format of an input data card. The 80 characters and blanks in the line correspond, respectively, to 80 card columns. The type of information stored in the various column areas is explained below the example. (Consult ref. 1 for additional information.) The various quantum mechanical coupling schemes are represented in the term columns by the following notation:

Coupling	Example	Card notation
LS	$3_{\mathbf{P}^{0}}$	3P*
jK	$\frac{1}{2}\begin{bmatrix} 5\\2 \end{bmatrix}^{O}$	13*K
LK	$F\left[\frac{3}{2}\right]^{O}$	F2*L
jj	$\left(\frac{1}{2},\frac{3}{2}\right)^{\mathrm{O}}$	12*J
Literal	21	21 N

In this notation, fractions are represented by the next larger integer. In the punched card data, LS coupling is predominant.

The flow chart and program listing are given in tables VI and VII. The comments at the beginning of the program define many of the program variables. The variables listed there represent information contained in the columns of the data cards. For example, the variable name C3139 stands for columns 31 to 39 and stores information on the lower quantum configuration of the emission line. (The letter M is used instead of C in some instances.)

During the execution of the first part of the program, the information on as many as 600 data cards is read into storage locations. All information on a card is given the same index number and the cards are indexed consecutively. As the cards are read, the program senses when a complete section of data has been read (the data are composed of five sections, for example, Na II, Mg III, Al IV, Si V, and P VI) and stores the first

APPENDIX - Continued

and last index number of each data section. The first index numbers of sections are represented by N1 to N5 and the last are represented by NA to NE. These index numbers are used subsequently to refer to data of a particular element.

The next part compares the quantum information of each spectral line in the first data section with quantum information of each line in the other sections. If the same transition is found in another section, the index number of the line in that section is stored and immediately the search begins in the next section. The index numbers of the matched transitions are stored in KLAP (IND).

If KLAP (IND) contains three or more index numbers, the third part of the program uses the wavelength information of these indexed lines to calculate the coefficients of a second-degree polynomial that best fits the data according to the method of least squares. This polynomial, in turn, is used to calculate the probable wavelength of any line whose corresponding transition cannot be found in a data section. (For example, if a particular transition is found in Na II, Mg III, and P VI, the wavelengths for that transition in Al IV and Si V will be calculated.) In addition, the polynomial is used to calculate the error of the fit relative to the known wavelengths. As the program proceeds, it prints out the matching index numbers, the transition, and the following information for each of the ions associated with the data sections: (1) ion identification, (2) atomic number, (3) known or calculated wavelength, (4) polynomial fit errors, (5) intensities of known lines, and (6) input data comments. For each new line a card is punched in the format of the input data cards.

If KLAP (IND) does not contain the index numbers of at least three lines, the third part of the program is omitted and the program repeats the comparison process of the second part by using the next transition of the first data section. This process involving the second and third parts of the program is repeated until every transition in the first data section has been compared with the transitions of the other four data sections. At this point the computer, in essence, cycles the data sections (that is, the second data section becomes the first data section, the third becomes second, etc., and the first section becomes the fifth section) and the entire sequence is repeated. The program stops when the data sections have been completely cycled.

¹In this program, a transition is described by the upper and lower configurations, terms, J-values, and parent terms. If all this information is given for each of two transitions (of different elements) being compared, it must be identical to be a match. For some transitions, however, the parent terms are not specified. The program will still match these transitions with completely specified transitions if all other quantum numbers match. Whether such a match is erroneous is determined by the fit error and other output data.

APPENDIX - Concluded

Without preventive measures this program would calculate each new line several times instead of once. To prevent this, the quantum identification of a matched transition is altered (statement 203) when its index number is stored. (The quantum identification of the transition in the first data section remains unaltered.)

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TABLE I. - PRESENT STATUS OF OBSERVATION AND ANALYSIS OF ATOMIC SPECTRA

Spectrum Number

		opectium number
		1
1	Н	(A)
2	Не	(A) (A)
3	Li	Ratings A A A
4	Be	A Essentially complete
5	В	© B © A
6	C	A A A E A
7	N	A A B A B A
8	0	(A) B A B A B B A
9	F	A O B B B B O A
10	Ne	B A c B B c B B c A
11	Na	A 🕏 O O O O O O O O O
12	Mg	(A) A P B B B B C C A
13	Al	B A A O B B B B O O × A
14	Si	(A) A A A x c c c c c c x A
15	P	00000000000000000000000000000000000000
16	S	🕑 сесххххссхххх 🙈
17	C1	@®@@@@@@@ × × ®O @
18	Ar	(A) A c c c c c c c c c c x A
19	K	B @ @ @ @ @ @ @ × ×
20	Ca	A В А с с с с с с с х х х
21	Sc	BB000B000000 O3
22	Ti	A B O O O B B O O O O O O O O O
23	V	BBBBB000000000000
24	Cr	B B c x c x c c x x x c c x c x
25	Mn	A A c B c x c x c c x x x c c x c x
26	Fe	A B A x c c x c c c c c x c c x x x x x x x
27	Co	
28	Ni	c c B c x x c c x x x x x x c x x
29	Cu	A A B x x x x x x x x x x
.30	Zn	B B B B X X X X X X
31	·Ga	ввссс
32	Ge	

TABLE II. - CALCULATED LINES

		CON.	FIG	URATI	I ON			Ti	ERM		PARENT	-TERM
ION	WAVELENGTH	LOWER			JPPE	.		OWER	UPPER	Jj	LOWER	UPPER
LI 2	166.376	152		•	15			15			FJMEK	OFFER
						79			1P*	01		
LI 2	167.273	152			15	6P		15	1P*	01 .		
LI 2	168.773	152			15	5P		15	1P*	01		•
LI 2	202 • 235	152			15	2P	G	15	3P*	01		
BE 1	1084.565	25	2P		2P	3P		3P*	3\$	11		2P*2
BE 1	1085.234	25	2P		ŽΡ	3P		3P*	35	01		2P * 2
BE 1	1086.069	25	2P	1.5	2P	3P		3P*	3\$	21		2P*2
BE 1	1291.136	2P2	-:-	•	2P	3D		1D	1F*	. 23		2P*2
BE 1	1400.935	25	2P		ŽΡ	3P		3P*	30	23		2P*2
BE 1	1428.806	25	2P		2P	3P		3P*	3P	12		2P*2
BE 1	1432.667	25	2 P		2P	3P		3P*	3P	22		2P*2
		2 S	2P	*	2P	3P		3P*	3P	21		2P*2
BE 1	1433.166				F-44	-						2P * 2
BE 1	1847.318	2,5	2 P		2P	4P		1P*	10	12		2172
BE_3	675.578	15	2 P	•	15	30		3P*	3 D	23		
BE 4	57.853		ïs			8P	G	25	2P*	12		
BE 4	58.137		15		• • •	7P	Ğ	25	2P*	12		
Or 3	20,015,1					• •	Ū		🖳 .		i	
B 1	783.803	252	2 P	25	2 P	3 P	Ğ	2P*	2P	22		19*
8 1	863.549	252	2P	25	2P	3P	-	2P*	2D	12		1P*
B 1	864 • 137	252	2P	25	2P	3P	G	2P*	2D	23		1P#
B 1	1082.616	2\$2	2P	25	2 P	3P	_	2P*	20	12		3P*
B 1	1085 • 836	2\$2	2P	2S	2P	3P		2P*	20	23		3P*
	1153.965	2S 2P2	2.				G	20			٠.	1P*
		25 272	2P	28	2P	3D	^		20*	33	•	3P*
B 1	1166.864			25	2P	3P	_	2P*	2P	. 12		
8 1	1167.621	2\$2	2P	25	2P	3P	-	2P*	2P	.11		3P*
B 1	1169.397	252	2P		2 P	3P	G	2P*	2P	22		3P*
B 1	1170.075	252	2 P	2\$	2P	3P	G	2P*	2P	21		3P*
B 1	1314.892	2\$2	2 P	2\$	2P2		G	2P*	2P	11		
B 1	1425.588	2S 2P2		25	2P	50		4P	4D*	34	•	3P*
B 1	1463.556	2S 2P2			.2P	4 D		4P	4D*	-12		3P*
B 1	1465.454	2S 2P2		2 \$	2P	4D		4P	4P*	33	•	3P*
B 1	1467.146	2S 2P2		25	2P	4 D		4P	4P*	21		3P*
8 1	1468.184	2S 2P2		25	2P	4D		4P	40*	34		3P*
B 1	1468.535	2S 2P2		25	2P	4D		4P	4D*	23		3P*
B 1	1476.706	2S 2P2		25	2P	4D		4P	4P*	32		3P*
B 1	1571.297	2S 2P2		2\$	2P	3 D		4P	4P*	11	•	3P*
B 1	1574.152	2S 2P2		25	2P	3D		4P	4P*	22		3P*
B 1	1581.440	2S 2P2		25	2P	30		4P	4P*	12		3P*
B 1	1581.737	2S 2P2		25	2P	3D		4P	4P*	21		3P*
B 1	1582.686	2S 2P2		25	2P	3D		4P	4P*	23		3P*
8 1	1583.226	2S 2P2		2\$	2P	30		4P	4P*	32		3P*
B 1	1583.718	2S 2P2		_' _	2P	3D		4P	4P*	33		3P*
Bi	1583.755	2S 2P2			2P	45		4P	4P*	23		3P*
	1607.406	2S 2P2										3P*
8 1 8 1	1608.507	25 2P2 25 2P2		2S 2S	2P 2P	3D		4P	4D*	12		3P*
						30		4P	4D*	23		
8 1	1608.814	2S 2P2			2P	3D		4P	4D*	34		3P*
B 1	1609.525	2S 2P2		25	2P	3D		4P	4D*	33		3P*
B 1	1609.982	2S 2P2			2P	45		4P	4P*	32		3P*
B 1	1609.992	2S 2P2			2 P	45		4P	4P*	33		3P*
B 1	1666.234	2S 2P2		2\$	2P	30		2P	2D*	12		1P*
B 1	1672.011	2S 2P2	2	25	2P	3D		2P	2D*	23		IP*
В 1	1837.385		2P			3D	G	2P*	20	23		
В 2	544.667	2\$2			25	5P	G	15	1P*	01		

TABLE II. - CALCULATED LINES - Continued

	•		CO	NF I GI	URATION		TE	RM		PARENT	-TERM
ſ	ON	WAVELENGTH	LOWER	₹	UPPE	R	LOWER	UPPER	JJ	LOWER	UPPER
В	2	631.735	25	2P	29	3P	3P#	3P	12		2P * 2
В	2	631.838	25	2P	2P	3P	3P*	3P	22		2P * 2
В	2	631.973	28	2P	2P	3P -	3P*	3P	21		2P*2
В	2	638.759	2.5	2P	25	7 D	3P*	3D	23		
8	2	644.564	25	2P	2P	3P	3P#	3D	22		2P*2
В	2	645.451	25	2P	2P	3P	3P*	3D	23		2P*2
	2	652.754	2 S	2P	28	6D	3P*	3D	23		•
B	2	652.770	′ 2S	2P	25	6D	3P*	3D	12		7.
В	2	676.219	2\$	2P	2P	4P	1P*	10	12		2P*2
	2	679.901	Ž Š	2P	25	5D	3P*	3D	12	•	
В	2	680.245	25	2P	25	5D	3P*	3D	23		
В	2	680.693	25	2P	25	5D	3 ₽ ≉	3D	01		
B B	2	734.999	ŽŠ	2P	25	4D	3P*	30	01		-
В	2	745.016	2P2		2P	5D	3P	3D*	23		2P*2
В	2	806.859	2P2		2P	4D	3P	30*	23		2P * 2
В	2	806.972	2P2		2P	4D	3 P	3D*	12		2P*2
В	2	810.661	2 S	2 P	2P	3P	1P*	1D	12		2P#2
В	2	859.472	292		2P	40	10	1F*	23		2P#2
В	2	865.729	2P2		2P	3D	1D	1F*	23		2P * 2
В	2	883 • 275	2 S	2 P	25	30	3P*	30	01		
В	2	987.377	25	2P	25	4D	1P*	1D	12		
В	2	987.491	2P2		ŽP	3 D	3P	3D*	12	•	2P*2
8 8 8	2	987.551	2P2		2P	3D	3P	3D*	22		2P*2
В	2	1055.558	2P2	•	2P	3D	3P	3P*	10		2P * 2
В	2	1056.273	2P2		2P	3D	3P	3P.*	01	•	2P*2
В	2	1056.873	2P2		2P	3D	3P	3P*	12		2P*2
B	2	1056.905	2P2	•	2P	3D	3P	3P*	21	•	2P*2
 	2	1057.674	2P2		2P	3D	3 P	3P*	22	•	2P*2
В	2	1082-912	25	2 P	2\$	38	3P#	3\$	01	,	
В	. 2	1211.024	2P2		2P	3\$	3P	3P*	12		2P*2
ВВ	2	1211.745	2P2		2P	3\$	3P	3P*	11		2P#2
В	2	1211.903	2P2		2P	38	3 P	3P*	22		2P * 2
ື 8	2	1212.079	2P2		2P	35	3P	3P*	10		2P*2
8	2	1213.061	2P2		2P	3S	3 P	3P*	01		
В	2	1379.404	2P2		2P	"3S	1 D	1'P*	21	••	2P * 2
8	2	1392.333	2P2		2P	30	15	1P*	01		2P*2
В	2	1605.689	2.5	2P	2\$	~3S	1P*	15	10		

TABLE II. - CALCULATED LINES - Continued

			JRATION		RM		PARENT-TERM
ION.	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	Ú	LOWER UPPER
B 2	1618.169	2S 2P	2P 2	3P*	3P	11	
В 3	337.254	28	10P	G 25	2P*	12	
B 3	339.664	25	9P	G 2S	2P*	12	
	343.735	25	8P	G 25	2P*	12	
B 3	349.505	25	7P .	G 25	2P*	12	
В 3	359.611	25	6P	G 25	2P*	12	
В 3	403.724	2P	100	2P*	20	23	• 1
	407.142	2P	9D	2₽#	20	23	
B 3 B 3	412.724	2P	80	2P#	2D	23	
	421.457	2P	7D	2P*	2D	23	The second secon
	434.684	2P	6D	2P*	20	12	
B 3	437.993	2P	6S	2P*	25	21	
			50 50	2P*	2D	12	
B 3	458 834	2P	5 \$			21	
В 3	465.962	2P		2P*	25		
<u>B 3</u>	528 • 407	2P	45	2P*	25	11	
B 3	1596.446	3 S	4P	2 \$	2P*	12	
B 3	1596.546	3 <u>S</u>	4P	2S	2P*	11	THE RESIDENCE OF THE PARTY OF T
B 3	1954.234	3P	4 D	2P*	20	12	
8 3	1954 • 897	3P	4D	2P*	2D	23	A CONTRACTOR OF THE STATE OF TH
						Manager	
B 4	48,629	152	1S 7P	G 15	1P*	01	
B 4	384.767	1S 2P	1S 3D	3P*.	3D	12	
B 4	385, 110	1S 2P	1S 3D	3P*	3D	23	
B 5	37.025	15	8P	G 2S	2P*	12	
B 5	37.206	15	7P	G 2S	2P*	12	
							2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
C 1	884,402	2S22P2	2S 2P3	10	1P*	21	
c i		2\$22P2	2S 2P3				•
	1105.027			10	1D*	22	
C 1	1120.795	2S 2P3	2P4	3D*	3 P	10	
C 1	1121.539	2S 2P3	2P4	30*	3P	21	
C 1	1122.667	2S 2P3	2P4	3D*	3P	22	•
C 1	1122.705	2S 2P3	2P4	3D*	3P	32	
C 1	1145.087	2S 2P3	2S 2P2 3D	5S*	5P	21	4P
C 1	1145.272	2S 2P3	2Ş 2P2 3D	5 S *	-5P	23	4P
C 1	1145.771	2S 2P3	2\$ 2P2 3D	5S*	5P	22	4P
C 1	1294.182	2S 2P3	2P4	3P*	3P	21	· · · · · · · · · · · · · · · · · · ·
C 1	1296.387	2S 2P3	2P4	3P*	3P	22	
							•
C 2	422 • 288	2S2 2P	2S 2P 3P	G 2P*	2P	22	1P*
C 2	435.721	2S2 2P	2S 2P 3P	G 2P*	2D -	12	1P*
C 2	435.808	2 S 2 2 P	25 2P 3P	G 2P*	2D	23	1P#
C 2	572.062	2S 2P2	2S 2P 3D	2D	2D*	33	1P*
C 2	640.837	2S 2P2	2S 2P 3D	4P	4P*	11	3P*
	641.099	2S 2P2	2S 2P 3D	4P	4P#	22	3P*
Č Ž	681.747	2S 2P2	2S 2P 4D	2D	2F*	34	3P*
Č 2	681.860	2S 2P2	2S 2P 4D	20	2F*	23	3P*
Č Ž	719.815	2S 2P2	2S 2P 3D	2 P	2D*	12	1P*
C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2	720.333	25 2F2 25 2F2	2S 2P 3D	2 P	2D+	23	1P#
C 2							
C 2	1033.042	2S 2P2	2S 2P 3S	20	2P*	32	3P*
C 2	1033.696	2S 2P2	2S 2P 3S	2D	2P*	21	3P*
C 2	1342.821	2S 2P2	2S 2P 3S	25	2P*	12	3P*
C 2	1344.100	2S 2P2	2S 2P 3S	2 \$	2P*	11	3P*
C 2	1349.381	2S 2P2	2P3	2\$	2P*	12	
4 4					14 a 1	x	et 1 et 1000 - 1
C 3 C 3	371.053	2\$ 2P	2S 4D	3P*	3D	Ō1	
C 3	585.568	2P2	2P 3S	3P	3P*	01	
							"

TABLE II. - CALCULATED LINES - Continued

			CONF	GURATI	ON		T	ERM		PARENT-TERM
İC) N	WAVELENGTH	LOWER	ū	PPER		LOWER	UPP ER	IJ	LOWER UPPER
	-1	721.592	2S22P3	-	2P4		20*	2P	21	
N	i	722.036	2S22P3		2P4		2D*	2P	32	
N	1	776.549	2S22P3		2P4		2P*	2P	11	المستفسد المالية
N	1	777.233	2S22P3		2P4		2P*	2P	22	
N	1	881.754	2S22P3	25	2P4		2P*	25	21	
N	1	901.929	2S 2P4		2P5		20	2P*	21	
N	1	904.245	2S 2P4		2P5		20	2P*	32	
N	ī	933.528	2P3		2P2 50)	20*	2F	34	10
N	î	937.959	2P3		2P2 40		2D*	2F	34	1D
										10
N	1	951.300	2P3	- i-	2P2 4	,	2D*	2D	33	
N	1	979.004	2S22P3		2P4		20*	20	33	and the second
N	1	981.225	2S22P3	2\$	2P4		20*	20	22	
Ŋ	1	992.327	2P3		2P 2 30)	2D*	20	33	10
Ń	1	992.373	2P3	·	2P2 30)	2D*	2F	34	10
N	1	993.433	2P3		2P2 30)	2D*	2D	22	1D
N	1	995.513	2P3		2P2 30		20*	2P	32	10
N	î	996.108	2P3		2P2 3		2D*	2P	21	10
							20*	2D	33	io io
, N	. 1	1035.857	2P3		2P2 49					
N	.1	1044.922	2P3		2P2 40		2P*	2P	22	10
Ņ	. 1	1049.326	2P3		2P2 40)	2P*	2D	23	1D
N	1	1075.931	2S22P3	. 25	2P4		2P*	2D	12	
N	1	1082.966	2\$22P3	25	2P4		2P*	2D	23	
N	1	1095.370	2P3	7.5	2P2 30) ·	2P*	25	21	10
N ·	ī	1100.069	2P3		2P2 30		2P*	2D	23	10
							2P*	2P	īī	10
Ņ	1	1103.368	2P3					2P		io
. <u>N</u>	1	1103.579	2P3		2P2 3	,	2P*		22	
. N.	1	1320.104	2S 2P4		2P5		2 P	2P*	22	
N	1	1587.581	2S 2P4		2P3 30)	4P	4D*	34	55*
N	1	1593.658	2S 2P4	25	2P3 30)	4P	4D*	23	55*
N	1	1603.098	2S 2P4	25	2P3 30) '' '	4P	4D*	12	55*
			, ·		777	•	. :			and the second second second
N	2	391.166	2\$22P2	25	2P2 3F	•	10	1F*	23	2D
N	2	391.955	2S22P2		2P2 3F		1 D	10*	22	2D
Ň	2	431.709	2S22P2		2P2 3F			3P*	12	4P
	~							3P*	22	4P
N	2	432.115	2S22P2	-	2P2 3F		3P			
N	2	432.736	2S 2P3		2P2 50		55*	5 P	23	4 P
N.	2 .	437.093	2S22P2	2\$	2P2 3F	G	3P	3D*	12	4 P
N	2	437.151	2S22P2	2 S	2P2 3F	G	3 P	30*	23	4P
N	2	437.275	2\$22P2		2P2 3F		3P	3D*	- 22	4P
		441.590	2P2	2.3	2P 60		3P	3D*	23	***
N	2									4.5
N	2	448.693	2S22P2		2P2 3F		3P	35*	11	4P
N	2	449.015	2S22P2		2P2 3F		3P	35*	21	4P
N	2	453.074	2S 2P3	25	2P2 40)	5S*	5P	22	4P
N	. 2	482.873	2S 2P3	2\$	2P2 30)	3D*	3P	32	2D
N	2	487.203	2P2		2P 50	Ó	10	1D*	22	
Ñ	2	495.347	2S 2P3		2P2 3		3D*	3F	34	20
	2	502.648	2S 2P3		2P2 30		5S*	5D	23	4P
Ņ	2									
N	2	510.168	2S 2P3		2P2 3[3D*	3D	33	2 D
, N	2	515.792	2P2		2P 40		10	3F*	22	
N	2	526.782	2S 2P3	28	2P2 30		3P#	3P	22	2D
N.	2	529.405	2P2		2P 50)	15	1P*	01	
N	2	534.477	2P2		2P 30) G	3 P	10*	12	
N	2	536.683	2P2		2P 30		3P	3F*	23	
Ň	2	559.132	2S 2P3	20	2P2 30		3P*	3D	23	2 D
	2	the state of the s	23 2F3 2P2		2P 49		15	1P*	01	20
N	2	605.490								20
N	2	620.421	2S 2P3		2P2 39		30*	3D	33	2D
Ņ	2	645.012	2S 2P3		2P2 30		30*	3D	33	4P
N	2	645.349	2S 2P3		2P2 30		30*	3D	22	4P
N	2	649.709	2S 2P3	25	2P2 30)	3D*	3P	32	4P
	-		_							

TABLE II.- CALCULATED LINES - Continued

•								-	0.0547	TERM
	•		IGURATI			TE			PARENT	
ION	WAVELENGTH	LOWER		JPPE	* .	LOWER	UPPER	JJ.	LOWER	UPPER
N 2	652.235	2S 2P3	25	2P 2	3D	3D* .	3F	34		4P
N 2	652.617	2S 2P3	28	2P2	3D	3D*	3F	23		4P
N 2	652.947	2S 2P3	25	2P2	3 D	3D*	3F	12		4P
N 2	694.749	2S 2P3	25	2P2	3\$	3P*	3D	23		·2D
N 2	725.616	2S 2P3	25	2P 2	3D	3P*	3 D	23		4P
N 2	726.103	2S 2P3	25	2P2	3D	3P*	3 D	01		4P
N 2	731.634	2S 2P3		2P2		3P*	3 P	22		4P
N 2	787.001	2S 2P3	-7.7	2P4		3D*	3P	10		
N 2	787.501	2S 2P3		2P4		3D*	3 P	21		
N 2	788.436	2S 2P3		2P4		3D*	3P	32		
N 2	788.485	2S 2P3		2P4		3D*	3P	22		•
N 2	796.398	2S 2P3	. 20	2P2		5S*	. 5P	23		4 P
N 2	911.065	2S 2P3	ĻJ	2P4		3P*	3P	21		41
		2S 2P3				_				,
_N 2	912.459		200	2P4		3P*	3P	22		40
N 2	979,782	2S 2P3	. 25	2P2	33	3P*	3P	22		4P
N 2	982.153	2S 2P3	25	2P2	35	3P*	3P	10		4P
N 2	982.860	2S 2P3		2P2		3P*	. 3P	21		4P
N 2	1105.050	2S 2P3		2P2		35*	3P	12		4P
							-			
N 3	268 239	2S 2P2		2P2	3P	4P	45*	22		3P
N 3	268.333	2S 2P2		2P2		4P	45*	32		3P
N 3	275.013	2S 2P2		2P2	3P	40	4D*	34		3P
	276.292	2S 2P2		2P2	3P	4P	4P*	33		3P
		2S 2P2	**	2P2	3P	2D `	2F*	34		1D
N 3	297.591	2S 2P2		2P	4D	49	4D*	12		3P*
N 3	305.766			2P		7.1			-	1P*
N 3	351.637	2S 2P2	23		3D	2D	2F*	34		, -
N - 3	387.553	2P3		2P2	30	4S*	4P	21		3P
N 3	387.671	2P3		2P2	3D ·	4S*	4P	22		3P
N 3	387.708	2P3		2P2	3D	45*	4 P	23		3P
<u>N 3</u>	390.731	2S 2P2	2\$	2P	35	2D	2P*	32		1 P#
N 3	393 • 846	2S 2P2	25	2P	30	ŹΡ	2P*	22		1P*
N 3	399.729	2P3		2P2	3D	2D*	2 P	32		10
N 3	402.308	2P3		2P2	3D	20*	2F	23		10
N 3	402.464	2P3		2P2	3D	20*	2F	34		1D
N 3	407.176	2P3		2P 2	3D	20*	2D	33		10
N 3	413.998	2S 2P2	25	2P	4D	2P	2D*	23		3P*
N 3	457.150	2P3		2P2	3\$	20*	2D	33		10
N 3	458.444	2P3		2P2	3D	2P*	20	23		10
N 3	469.104	2P3		2P2	35	45*	4P	23		3P
N 3	469.687	2 P 3		2P 2		45*	4P	22		3P
N 3	509.418	2S 2P2	2 S	ŹP	3D	2P	2P≢	22		3P*
N 3	523.047	2P3		2P 2	-	2P*	20	23		10
N 3	576.401	2P3	25	2P	3P	2D*	2P	32		1P*
N 3	660.574	2S 2P2	25	2P	35	2P	2P*	22		3P#
		23 212			73	۷.				
N 4	192.003	25 21	S	25	7 0	3P*	3D	23	··· ·	
		25 21		25	50	3P*	3D	01	•	
	205 • 904	25 21		25	6D	1P*	10	12		
N 4	223.711	25 21		25	45	3P*	35	21		
	232.444									
N 4	235.799	2 S 2		25	50	1P*	1D	12		2P*2
N 4	244.350	2P2		2P	4D	10	1F*	23		
N 4	270•926	28 21		2P	3P	1P*	10	12	,	2P*2
N 4	951.321	28 21	•	2P2	*	1P*	1 S	10		
N . 6	23.024	1 S2		15	6P	G 1S	1P*	01		
N 6	23.282	152		15	5P	GIS	1P*	01		
N 6	173.886	15 2	P	15	3D	, 3P*	3D .	12		•
	·									

TABLE II. - CALCULATED LINES - Continued

		CONFI	GUR AT I ON	TE	RM		PARENT-TERM
ION	WAVEL ENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER
0 1	576.977	2522P4	2S 2P5	10	1P*	21	
o i	644.409	2S22P4	2S 2P5	15	1P*	01	
_	724.627	2P4	2P3 3D	G 3P	3P#	22	.2P*
	A SA	2P4	2P3 4S	G 3P	3P*	22	2P*
0 1	745.913	_					20*
0 1	803 • 350	2P4	2P3 3D		30*	23	20*
0 1	805.795	2P4	2P 3 3D	G 3P	30*	12	
0 1	806 • 844	2P4	2P3 3D	G 3P	35*	21	2D*
0 1	910.259	2P4	2P3 3D	10	1P*	21	2D*
0 2	387.764	2P3	2P2 5D	20*	2F	34	10
	418.695	2P3	2P2 4S	G 45*	4P	21	3P
			2P2 4S	2D*	20	33	- 10
0 2	432.539	2P3		2P*		11	iD
0 2	468.749	2P3			2P		3P
0 2	468.755	2P3	2P2 4S	2D*	2P	21	
0 2	574.747	2S 2P4	2S 2P3 3D	4P	4D*	34	55*
0 2	575.446	2S 2P4	2S 2P3 3D	4P	4D*	23	5S*
0 2	576.110	2S 2P4	2S 2P3 3D	4P	4D*	12	55*
0 2	661.515	2S 2P4	2P5	2D '	2P*	21	
0 2	662.751	2S 2P4	2P5	20	2P*	32	
0 2	794.980	2\$22P3	2S 2P4	2P*	2D	12	
0 2	952.939	2S 2P4	2P5	2P	2P*	22	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	. = 7=: 1.		: .			
0 3	263.594	2P2	2P 4D	G 3P	3P*	10	
0 3	263.627	2P2	2P 4D	G 3P	3P*	11	
0 3	263 • 765	2P2	2P 4D	G 3P	3P*	21	
0 3	554.903	2S 2P3	2S22P 3P	3D*	3P	21	
		2S22P2	2S 2P3	G 3P	3D*	11	
0 3	834.220	232272	23 27 3	G			·
0 5	168.131	2S 2P	2P 3P	3P*	30	22	2P*2
0 5	203.946	2P2	2P 3D	3P	3D*	22	ZP*2
			2P 3S	3P	3P*	-11-	
0 5	227.565	2P2		3P	3P*	10	2P*2
0 5	227.649	2P2	2P 3S	3F	. JFT		2772
F 1	572.002	2P5	2P4 3D	G 2P*	2D	23	. 18
F 1	573.228	2P5	2P4 3D	G 2P*	20	12	18
F 1	634.921	2P5	2P4 4D	G 2P*	2P	22	1 D
F ī	640.401	2P5	2P4 3D	G 2P*	2 D	22	10
F 1	648.279	2P5	2P4 4D	G 2P*	2D	23	. 10
F 1	664 988	2P5	2P4 4D	G 2P*	2 P	11	-1D
F 1	670.752	2P5	2P4 3D	G 2P*	2P	12	10
F 1	670.980	2P5	2P4 3\$	G 2P*	25	21	15
- _			2P4 3D	G 2P*	2P	22	10
F 1	671.301	295		G 2P*			15
F 1	673.310	2P5	2P4 3S		2 S	11	
F 1	674.139	2P5	2P4 3D	G 2P*	2D	23	10
F 1	678.387	2P5	2P4 3D	G 2P*	2P	21	10
F 1	693.035	2P5	2P4 3D	G 2P*	28	21	1D
F 1	760.415	2P5	2P4 4D	G 2P*	2P	11	3P
F 1	764.158	2P5	2P4 3D	G 2P*	4P	23	3P,
F 1	766.905	2P5	2P4 4D	G 2P*	2P .	21	3P
F 1	779.581	2P5	2P4 4D	G 2P*	20	12	39
F 1	789.669	2P5	2P4 3D	G 2P*	2P	21	3P
F 1	792.726	2P5	2P4 3D	G 2P*	2P	11	3P
_		2P5	2P4 4S	G 2P*	2P	12	3P
F 1	797.671	273	2F7 43	G 27 T	£.c	12	٠,٠

TABLE II. - CALCULATED LINES - Continued

		CONF I GU	IR AT TON	TER	м	PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER			J LOWER UPPER
	324.629	2P4	2P3 4D	G 3P	3D* 2	3 2P#
F 2	342.423	2P4	2P3 4D	G 3P	3D* 2	.3 2D*
F 2	351.993	2P4	2P3 3D	G 3P	3D* 1	.2 2P*
F 2	352.264	2P4	2P3 3D	G 3P	3D* 2	2P*
F 2	353.212	2P4	2P3 4D	G 3P		.2 2D*
F 2	353.277	2P4	2P3 4D	G 3P		.2 20*
F 2	354.850	2P4	2P3 3D	G 3P		.2 2P*
F 2	356.598	2P4	2P3 4D	10		2P*
F 2	374.957	2P4	2P3 3D	G 3P		20*
F 2	375 • 383	2P4	2P3 4D	10		20*
F 2	375.745	2P4	2P 3 4D	1D		22 2D* 23 2D*
F 2	376.005	2P4	2P3 4S	G 3P		20* .0 20*
F 2	376.024	2P4	2P3 3D	G 3P	-	.0 20+ 23 20+
F 2	376.688	2P4	2P3 4D	1D	-	21 2P*
F 2	377.638	2P4	2P3 4S	1D G 3P)1 2D*
F 2	378.034	2P4	2P3 3D			
	379.851	2P4	2P3 3D	G 3P		1 20*
F 2	380.230	2P4	2P3 3D	1D		2P*
F 2	382.891	2P4	2P3 3D	10		2P*
F 2	392.957	2P4	2P3 4D	G 3P)1 4S*)1 2D*
F 2	450.129	2P4	2P3 3D	15	1P* (2D*
	220 520	2P3	2P2 5\$	G 4S*	4P 2	.3 3P
F 3	220.538	2P3 2P3	2P2 4D	G 45*	•	1 3P
	223.026	2P3	2P2 4D	G 4S*		3 3P
F 3 F 3	224 • 368 244 • 064	2P3 2P3	2P2 4D	20*		2 3P
F 3	252.356	2S 2P4	2S 2P3 3D	4P		3D*
	253.102	2S 2P4	2S 2P3 3D	4P		3 30*
F 3	253,438	2S 2P4	2S 2P3 3D	4P		.2 3D*
F 3	254.458	2S 2P4	2S 2P3 3D	4P		2 30*
F 3	254.623	2S 2P4	2S 2P3 3D	4P	4P* 3	30*
F 3	254.872	2S 2P4	2S 2P3 3D	4P	4P* 2	21 3D*
F 3	255.971	2P3	2P2 3D	G 4S*	4D 2	21 3P
F 3	263.287	2P3	2P2 3D	2D*	2F 2	23 10
	e es simble in in a	•	•			
F 4	158.383	2P2	2P 5D	G 3P		.2
F 4	168.356	2P2	2P 4D	G 3P		2
F 4	169.321	2P2	2P 4D	G 3P		11
F 4	169.391	2P2	2P 4D	G 3P		22
F 4	178.931	2P2	2P 4S	G 3P		01
F 4	214.103	2P2	2P 3D	1D		22
F 4	219.743	2P2	2P 3D	10		21
F 4	238.670	2S 2P3	2S 2P2 3D	3P*		12 4P 12 2D
F 4	307.485	2S 2P3	2S 2P2 3S	1P*		L2 20
F 4	419.551	2\$22P2	2S 2P3	G 3P	35*	· ·
· E E	118.449	2P_	6D	G 2P*	2D :	12
F 5 F 5		2S 2P2	2S 2P 4D	4P		21 3P*
	132.221	25 2P2 25 2P2	2S 2P 4S	4P		3P*
F 5	137.856 166.018	25 2P2 25 2P2	2S 2P 3D	2P		11 1P*
F 5	186.860	2S 2P2	2S 2P 3S	4P		1 3P*
F 5	200 • 232	2S 2P2	2S 2P 3S	2P		22 1P*
F 5	200.252	2S 2P2	2S 2P 3S	2P		1P*
	200020		,			

TABLE II. - CALCULATED LINES - Continued

			CO	ve I	GURATION			TE	RM		PARENT-TERM
1	ON	WAVELENGTH	LOWER		UPPE	D		LOWER	UPPER	JJ	LOWER UPPER
F	5	768.505	2S 2P2	`	2P3			20	20*	11	ESWER OFFER
•		1004303	25, 212		2+3	,		_ 1	21 4	• •	•
F	6	90.799	252		25	5P	G	15	1P*	01	•
F	6	94.403	25	2P	25	60		3P*	3D	12	·
F	6	94.460	28	2P	25	60		3P*	3 D	23	•
F	6	98.038	25	2 P	2 P	4P		3P*	30	23	
F	6	99.047	25	2P	25	5D		3P*	30	12	•
Ē	6	103.136	28	2 P	25	6D		1P*	10	12	
F	6	103.207	2P2	٠.٠	2P	5D		3P	3D*	23	2P*2
F	6	103.207	2P2		2P 2P	50 50		3P	3D*	23	27+2
F	6			20	_						20+2
•	_	106.446	25	2P	2 P	4P		1P*	10	12	2P*2
F	6	106.460	28	2P	2 P	4P		1P*	10	12	
F	6	108.501	2\$	2P	25	5D		1P*	10	12	
F	6	108.874	25	2P	25	40		3P*	30 ·	12	
F	6	112.118	25	2P	25	45		3P#	35	21	
F	6	113.819	2P2		2P	4D		3 P	3D*	12	2P*2
F	6	136.563	2P2		2\$	4F		1D	1F*	23	A CONTRACTOR
F	. 6	145.157	2P2		. 2P	30		3P	3P*	11	2₽#
F	6	183.743	2P2		2P	3\$		15	1P*	01	2P*2
F	6	189.179	2P2		2P	35		15	1P*	01	
F	6	447.229	25	3 P	25	4D		3P*	3D	01	•
F	6	447.342	25	3P	25	40		3P#	30	12	
F	6	447.559	25	3P	25	4D	-	3P*	30	23	the second of parameters
F	6	657.226	25	2P	2P2			1P*	15	10	•
•	-	0318220	. 23	21	212			200	13	10	
F	7	69.371		25		10P	G	25	2P*	12	•
F	7	69.975		2\$		9P		25	2P*	12	*
F	7	70.882		25		. 8P		25	2P*	12	
F	7	72.339		25		7P		2S	20*	12	
F	7.	74.513			•						
F				25		6P	G	25	2P*	12	
•	7	75.382		2 P		10D		2P*	20	23	
F.	7	76.073		2P		90		2P*	20	23	
F	7	77.122		2P		80	_	2P*	2D	23	
F	7	78.366		25		5P	G	2\$	2P*	12	
F	7	78•746		2P		7 D		2P*	20	23	
F	7	81.171		2 P		6D		2P*	20	12	** *****
F	7	81 • 234		2P		6D		2P*	2D	23	
F	7	81.513		2P		65		2P*	25	21	
F	ż	85.753		2P		5D		2P*	2D	12	
F	7	85.820		2P		5D		2P*	2D	23	
F	<u>.</u> [86.457	-	2P		5S		2P*	25	21	
	7		* ***			45		2P*	25	<u></u>	
-	<u> </u>	97.261		2P						21	
-	7	97.357		2P		45		2P*	25	12	
F	7	335.114		35		4P		25	2P*		
F	7	335 • 233		35		4P	-	25	2P*	11	
F	7	367.466	•	3P		4D		2P*	2D	12	
F	7	367.787		3 P		4D		2P#	2 D	23	*** *** ***
, F	7	381.762		3D		4F		2D	2F*	23	
F	7	381.882		30		4F		20	2F*	34	
					•		_				
F	, 8	13.336	152		18	6P	Ģ	15	1P*	01	
							_				
F	9	11.473		15	-	7 P	G	2\$	2P*	12	

TABLE II. - CALCULATED LINES - Continued

		CONFIG	JRATION	TE	R M		PARENT	-TERM
ION	WAVEL ENGTH	LOWER	UPPER	LOWER	UPPER	JJ :	LOWER	UPPER
NE 2	296.944	2P5	2P4 3D	G 2P*	2D	23		15
NE 2	297.586	2P5	2P4 3D	G 2P*	2D	12		18
NE 2	303 • 666	2P5	2P4 4D	G 2P*	2P	22		10
NE 2	304.415	2P5	2P4 4D	G 2P*	2D	23		1D
NE 2	306.492	2P5	2P4 4D	G 2P*	2P	11		10
NE 2	320.193	2P5	2P4 5D	G 2P*	20	23		3P
NE 2	324. 120	2P5	2P4 3D	G 2P*	2D	22		10
NE 2	327.739	2P5	2P4 3D	G 2P*	2P	21	•	• 1D
NE 2	327.784	2P5	2P4 3D	G 2P*	2P	12		10
NE 2	330.932	2P5	2P4 4D	G 2P#	4P	12		3P
NE 2	331.108	2P5	2P4 4D	G 2P*	2P	21		3P
NE 2	355.961	2P5	2P4 3D	G 2P*	4D	23	*	3P
NE 2	356.690	2P5	2P4 3D	G 2P*	4D	12		3P
,,,,			24,7	·		•		_
NE 3	195.652	2P4	2P3 4D	G 3P	3D*	23		2P*
NE 3	204 037	2P4	2P3 4D	G 3P	3D*	23		2D*
NE 3	204 • 427	2P4	2P3 4D	G 3P	3D*	12		20*
NE 3	205.126	2P4	2P3 4D	G 3P	3P*	22		2D#
NE 3	205.328	2P4	2P3 4D	G 3P	3P*	12	-	20*
NE 3	207.099	2P4	2P3 4D	10	1F*	23		2P*
NE 3	208.190	2P4	2P3 4S	G -3P	3P*	22		2P*
NE 3	215.651	2P4	2P3 4D	1D	1F*	23		20*
	215.682	2P4	2P3 4D	1D	1D*	22		ZD*
NE 3	215.944	2P4	. 2P3 4D	10	1P*	21		2D*
	217.726	2P4	2P3 3D	G 3P	3D*	23		2P*
NE 3 NE 3	217.990	2P4	2P3 3D	G 3P	30*	12		2P*
	218.275	2P4	2P3 3D	G 3P	3P*	22		2P*
NE 3	218.469	2P4	2P3 4S	G 3P	3D* c	23		2D*
NE 3	218.743	2P4	2P3 3D	G 3P	3P *	12		2P*
	219.908	2P4	2P3 4S	1D	1P*	21		2P*
NE 3 NE 3	223.085	2P4	2P3 40	G 3P	3D*	23		45*
NE 3	223.242	2P4	2P3 4D	G 3P	30*	01		45*
NE 3	223.392	2P4	2P3 4D	G 3P	30*	12		4S*
	227.307	2P4	2P3 3D	G 3P	35*	21		20*
NE 3	227.381	2P4	2P3 3D	G 3P	3P*	21		2D*
NE 3	227.493	2P4	2P3 3D	G 3P	3P*	22		2D*
NE 3	227.693	2P4	2P3 3D	G 3P	3P#	11		2D*
		2P4.		G 3P	3₽#	10		2D*
NE 3	227 • 765			G 3P	3P*	12		2D*
NE 3	227 800	2P4	2P3 3D 2P3 3D	G 3P	3P*	01		20+
NE 3	227 • 890	2P4	2P3 3D	G 3P	3S*	01	* * * * * * * * * * * * * * * * * * * *	2D*
NE 3	228 • 304 228 • 892	2P4 2P4	2P3 3D	G 3P	30*	23		20*
NE 3			* * * * * * * * * * * * * * * * * * *		30*	12		2D*
NE 3	229.177	2P4 2P4	2P3 30 2P3 30	G 3P G 3P	30± 30*	01		2D*
NE 3	229.381		2P3 4S		10*	22	*	20*
NE 3	230.113	2P4		10	16+	23		2P*
NE 3	230.268	2P4	2P3 3D	10				2P*
NE 3	230.768	2P4	2P3 3D 2P3 3D	10	1P*	21		2P*
NE 3	231 • 302	2P4	2P3 4S	10	1D*	22		45*
NE 3	238.031	2P4	2P3 4S 2P3 4S	G 3P	35*			45* 45*
NE 3	238.373	2P4		G 3P	35*	11		45+ 2D*
NE 3	240 - 803	2P4	2P3 3D	1D	1F*	23		20*
NE 3	241 - 517	2P4	2P3 3D	1D	10*	22		2D*
NE 3	241.931	2P4	2P3 3D	1D	1P*	21		
NE 3	260.861	2P4	2P3 3D	18	1P*	01		20*
NE 3	376.648	2S22P4	2S 2P5	1 D	1P *	21		•

TABLE II. - CALCULATED LINES - Continued

	<u> </u>	CONET	TERM			PARENT-TERM		
ION	WAVELENGTH	LOWER	GURATION UPPER	LOWER	UPPER	JJ LOWER UPPER		
NE 4		2P3	2P2 5D	G 45*	42		LUNEX	
NE 4	140 • 234 140 • 283	2P3	2P2 50	G 45*	4P	22		3P
NE 4	142.793	2P3	2P2 5D	2D*	2D	23		3P
NE 4	148.629	2P3	2P2 4D	G 4S*	4D	33	-	1D
NE 4	148.955	2P3	2P2 4D	G 45*		21		3P
NE 4	153.339	2P3	2P2 5D	2P*	4D	23		3P
NE 4	159.783			G 45*	2D	23		3P
NE 4		2 S2 2 P 3	2S 2P3 3P		4P	23		5S*
	164.893	2P3	2P2 4D	2P*	2P	11		3P
NE 4 NE 4	164.996	2P3	2P2 4D	2P*	2P	22		3P
19 1 mass/11/14	172.755	2P3	2P2 3D	G 4S*	4D	21		3P
	172.854	2S 2P4	2S 2P3 3D	4P	4S*	32	•	3D*
NE 4	172.862	2P3	2P2 3D	G 4S*	4D	23		3P
NE 4	173.246	2S 2P4	2S 2P3 3D	4P	4D*	23		3D*
NE 4	173.382	2S 2P4	2S 2P3 3D	4P	40*	12		3D*
NE 4	173.926	2S 2P4	2S 2P3 3D	4P	4P*	32	-	30*
NE 4	173.981	2S 2P4	2\$ 2P3 3D	4P	4P*	33		3D*
NE 4	174.119	2S 2P4	2S 2P3 3D	4P	4P#	21		3D*
NE 4	176.045	2P3	2P2 3D	2D*	20	22		10
NE 4	177.008	2P3	2P2 3D	2D*	2F	23		10
NE 4	185.758	2P3	2P2 3D	2D*	2F	23	•	3P
NE 4	212.899	. 2P3	2P2 3S	2D*	20	22		10
NE 4	220.980	2P3	2P2 3S	2D*	2P	22		3P
NE 4	240.782	2S 2P4	2S 2P3 3S	20	20*	33		3D#
	- 100 100							
NE 5	106.291	2P2	2P 6D	G 3P	· 30*	23		
NE 5	108.945	2S 2P3	2S 2P2 5D	5\$*	5P	23		4P
NE 5	110.146	2P2	2P 5D	G 3P	30*	12		
NE 5	110.373	2P2	2P 5D	G 3P	3D*	23		
NE 5	110.422	2P2	2P 5D	G 3P	3P*	22		
NE 5	113.709	2P2	2P 5D	10	1F*	23		•
NE 5	114.280	2P2	2P 5D	10	1D*	22	•	
NE 5	117.164	2S 2P3	2S 2P2 4D	5\$*	5P .	22		40
NE 5	117.546	2P2	2P 4D	G 3P	3P*	12		• • • •
NE 5	118.280	2P2	2P 5D	15	1P*	01		+
NE 5	118.398	2P2	2P 4D	G 3P	30*	11		
NE 5	118.452	2P2	2P 4D	G 3P	3D*	22		
NE 5	118.663	2P2	2P 4D	G 3P	3P*	10		*** ***
NE 5	118.677	2P2	2P 4D	G 3P	3P*	11		
NE 5	118.764	2P2	2P 4D	G 3P	3P*	21		
NE 5	118.887	2P2	2P 4D	G 3P	3D*	01		
NE 5	119.000	2P2	2P 4D	G 3P	30*	12		
NE 5	119.072	2S 2P3	2S 2P2 4D	3D*	3F	34		20
NE 5	123.952	29 2P2	29 4D	10	3F*	22		20
NE 5	124.186	2P2	2P 4S	G 3P	3P*	12		
NE 5				G 3P				
NE 5	124.314 124.388	2P2 2P2	2P 4S 2P 4S	G 3P	3P* 3P*	21		
NE 5	124.582	2P2	2P 4S	G 3P	3P*	01		
NE 5			2S 2P2 3P	10	10*			
NE 5	125.072 125.776	2\$22P2 2\$22P2	2S 2P2 3P	1D	16+ 1F*	22		2D 20
NE 5		2322P2 2P2	25 2P2 3P 2P 4D	15	1F*		Ť	20
	127.698					01		4 D
NE 5 NE 5	129.457	2S 2P3.	2S 2P2 4D	3D*	3D	33		4P
NE 5	129.919	2S 2P3	2S 2P2 4D	3D* 3D*	3F	34		4P
	129.996	2\$ 2P3	2S 2P2 4D		3F	23		4P
NE 5	130.148	2S 2P3	2S 2P2 4D	3D*	3F	12		4P
NE 5	130.719	2S22P2	2S 2P2 3P	G 3P	3P *	12		4P

TABLE II. - CALCULATED LINES - Continued

	•	CONFIGURATION		TE	ŔŇ	PARENT-TERM		
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
NE 5	130.837	2S22P2	2S 2P2 3P	G 3P	3P*	22		4P
NE 5	131.956	2S22P2	2S 2P2 3P	G 3P	3D*	12		4P
NE 5	132.008	2S22P2	2S 2P2 3P	G 3P	3D*	23		4P
NE 5	132.086	2S22P2	25 2P2 3P	G 3P	3D*	22		4P
NE 5	134.812	2P2	2P 4S	18	1P*	01	······································	
NE 5	135.724	2522P2	2S 2P2 3P	G 3P	35*	11		4P
NE 5	135.860	2 S2 2 P 2	2S 2P2 3P	G 3P	35*	21	,	4P
NE 5	142.347	2P2	2P 3D	G 3P	3P*	01		
NE 5	142.582	2P2	2P 3D	G 3P	3P*	12		
NE 5 -	142.678	2S 2P3	2S 2P2 3D	3D*	3D	33		2D
NE 5	143.271	2P2	2P 3D	G-3P	3D*	11		
NE 5	143.401	2P2	2P 30	G 3P	3D*	22		
NE 5	143.413	25 2P3	2S 2P2 3D	3D*	3P	32		20
NE 5	144.407	2S 2P3	2S 2P2 3D	3D*	3F	34		2D
NE 5	144.687	2P2	2P 3D	G 3P	1D*	12		
NE 5	144.928	2P2	2P 3D	G 3P	3F*	23		
NE 5	149.529	25 2P3	2S 2P2 3D	3P*	30	23		20
NE 5	150.375	2S 2P3	2S 2P2 3D	3ρ≉	3P	22		20
NE 5	151.430	2P2	2P 3D	10	3F*	22		
NE 5	156.134	2S 2P3	2S 2P2 3D	3D*	30	33		4P
NE 5	156.196	2S 2P3	2S 2P2 3D	3D*	3D	22		4P
NE 5	158.608	2S 2P3	2S 2P2 3D	3D*	3F	34		4P
NE 5	158.743	2S 2P3	2S 2P2 3D	3D*	3F	23		4P
NE 5	158.842	2S 2P3	2S 2P2 3D	3D*	3F	12		4P
NE 5	159.931	2S 2P3	2S 2P2 3D	3D*	3P	21		4P
NE 5	159.986	2S 2P3	2S 2P2 3D	3D*	3P	32		4P
NE 5	162.048	25 2P3	2S 2P2 30	10*	1F	23		20
NE 5	164.459	2S 2P3	2S 2P2 3D	3P*	3D	23		4P
NE 5	164.538	2S 2P3	2S 2P2 3D	3P*	30	01	.,	4P
NE 5	164.635	2S 2P3	2S 2P2 3D	3P*	30	12		4P
NE 5	166.767	2S 2P3	2S 2P2 3S	3D#	3D	33		20
NE 5	167.892	2P2	2P 3S	G 3P	3P*	11		
NE 5	168.721	2S 2P3	2S 2P2 3D	3P#	3P	22		4P
NE 5	171.270	2S 2P3	2S 2P2 3D	1P*	10	12		2D .
NE 5	175.775	2S 2P3	2S 2P2 3S	3P*	3 D	23		2D
NE 5	183.740	25 2P3	2S 2P2 3S	3D*	3P	32	*	4P
NE 5	183.743	2S 2P3	25.2P2 3S	30*	3P	21		4P
NE 5	184.112	2S 2P3	2S 2P2 3S	. 3D*	3P	10		4P
NE 5	191.029	2S 2P3	2S 2P2 3S	10*	10	22		2D
NE 5	191.786	2S 2P3	2S 2P2 3D	3S*	3P	12		4P
NE 5	204.592	25 2P3 25 2P3	2S 2P2 3S	1P*	10`	12		2D
NE 5	210.198	2\$ 2P3	2S22P 3P	3D*	3P	32		
NE 5	210.198	25 2P3	2S22P 3P	30*	3P	. 21		
NE 5	214.641	2S 2P3	2S22P 3P	3D*	3P 3D	33		
NE 5		2S 2P3	2S22P 3P	3P*	30	23		
NE 5	230.521	25 2P3 25 2P3	2\$22P 3P	3P*	30 30	12		
NC 3	230.921	43 4P3	2322F 3F	3F T	50	14		

TABLE II. - CALCULATED LINES - Continued

			URATION	TERM	PARENT-TERM		
ION	WAVELENGTH	LOWER,	UPPER	LOWER UPPER	IJ	LOWER UPPER	
NE 6	86.074	2P	6D -	G 2P* 2D	12	*	
NE 6	86.171	2P	6 D	G 2P* 2D	23		
NE 6	89.065	2S 2P2	2S 2P 5D	4P 4D*	34	. 3P*	
NE 6	89 . 9 44	2P	5 D	G 2P* 2D	12	•	
NE 6	90•049	2P	5 D	G 2P* 2D	23		
NE 6	96.973	2S 2P2	2S 2P 4D	4P 4P*	33	3P*	
NE 6	97.028	2S 2P2	2\$ 2P 4D	4P 4D*	12	3P*	
NE 6	97.085	2S 2P2	2S 2P 4D	4P 4P*	32	3P*	
NE 6	97.087	2S 2P2	2S 2P 4D	4P 4D*	23	3P*	
NE 6	97.106	2S 2P2	2S 2P 4D	4P 4D*	34	3P*	
NE 6	98.105	2P	4D	G 2P* 2D	12	•	
NE 6	98.234	2P	4D	G 2P* 2D	23	20+	
NE 6	100.444	2S 2P2	2S 2P 4S	4P 4P*	23	3P*	
NE 6	100.607	2S 2P2	2S 2P 4S	4P 4P* 4P 4P*	33	3P*	
NE 6	101.077	2S 2P2	2S 2P 4S		32	3P*	
NE 6	101.240	2S2 2P	2S 2P 3P	G 2P* 2P G 2P* 2D	22	1P*	
NE 6	101.456 101.578	2\$2 2P 2\$2 2P	2S 2P 3P	: - :	12	1P* 1P*	
NE 6	101.786	2\$2 2P 2P	2S 2P 3P 4S	G 2P* 2D G 2P* 2S	23 11	IP+	
NE 6		2S 2P2	2P2 3P	4P 4S*	22	. 3P	
NE 6 NE 6	101.787 101.855	2S 2P2	2P2 3P	4P 4S*	32	3P	
	101.655	23 2FZ. 2P	2P2 3P	G 2P* 2S	21	34	
NE 6 NE 6	103.306	2S 2P2	2P2 3P	4P 4P*	33	3P	
	104.111	25 2P2 25 2P2	2P2 3P	4P 4D*	34	3P 3P	
NE 6	104.111	25 2P2	2S 2P 4D	2D 2F*	34	3P*	
NE 6	104.201	2S 2P2	2S 2P 4D	2D 2F*	23	3P*	
NE 6	105.229	25 2P2	2S 2P 4D	2D 2D*	33	3P*	
			•. •				
NE 6	107.611	2S 2P2	2P2 3P	2D 2D*	33	10	
NE 6	109.084	2S 2P2	2P2 3P	2D 2F*	23	10	
NE 6	109.127	2S 2P2	2P2 3P	2D 2F*	34	· 1D	
NE 6	109.368	2S2 2P	2S 2P 3P	G 2P* 2S	11	3P*	
NE 6	111.017	2S2 2P	2S 2P 3P	G 2P* 2D	12	3P*	
NE 6	113.429	2S 2P2	2S 2P 40	2P 2D*	23	3P*	
NE 6	114.095	2S2 2P	2S 2P 3P	G 2P* 2P	12	3P*	
NE 6	114.143	2S2 2P	2\$ 2P 3P	G 2P* 2P	11	3P*	
NE 6	114.305	2S2 2P	2S 2P 3P	G 2P* 2P	21	3P*	
NE 6	117.484	2S 2P2	2S 2P 3D	2D 2D*	33	1P* 1P*	
NE 6	118.634	2S 2P2	2S 2P 3D	2D 2F*	34	3P*	
NE 6	120.151	2S 2P2	2S 2P 3D	• • • • • • • • • • • • • • • • • • • •	11	3P*	
NE 6	120.187	2S 2P2	2S 2P 3D	4P 4P*	12 21	3P*	
NE 6	120.205	2S 2P2	2S 2P 3D 2S 2P 3D	4P 4P* 4P 4P*	22	3P*	
NE 6	120-242	2S 2P2 2S 2P2	2S 2P 3D 2S 2P 3D	4P 4P*	23	3P*	
NE 6	120 • 288 120 • 335	2S 2P2 2S 2P2	2S 2P 30	4P 4P*	32	3₽*	
NE 6				4P 4P*	33	3P*	
NE 6	120.386	2S 2P2 2S 2P2	2S 2P 3D 2S 2P 3D	4P 4D*	12	3P*	
NE 6	121.078 121.121	2S 2P2	2\$ 2P 3D	4P 4D*	23	3P*	
NE 6	121.219	2S 2P2	2S 2P 3D	4P 4D*	33	3P*	
NE 6	125.132	2S 2P2	2S 2P 3D	2S 2P*	12	1P*	
NE 6	126.128	2P3	2P2 3D	4S* 4P	21	39	
NE 6	126.144	2S 2P2	2S 2P 3D	2P 2P*	ĩi	1P*	
NE 6	126.149	2P3	2P2 3D	4S* 4P	22	3P	
NE 6	126.206	2P3	2P2 3D	4S* 4P	23	3P	
- NE 6	127.428	2S 2P2	2S 2P 30	2P 2P*	22	10*	
NE 6	127.680	2P3	2P2 3D	2D* 2 P	32	1D	
NE 6	128.070	25 2P2	2S 2P 30	2P 2D*	12	1P*	
NE 6	128.170	2S 2P2	2S 2P 3D	2P 2D*	23	1P*	
NE 6	128.214	2P3	2P2 3D	2D* 2F	34	10	
NE 6	128.235	2P3	2P2 3D	2D* 2F	23	10	
NE 6	129.786	2P3	2P2 3D	2D* 2D	33	1D	

TABLE II. - CALCULATED LINES - Continued

		CONFIG	URATION	TER	RM		PARENT	-TERM
ION	WAVEL ENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
NE 6	130.259	2S 2P2	2S 2P 3D	20	2F*	34		3P*
NE 6	130.398	2S 2P2	2S 2P 3D	20	2F*	23		3P*
NE 6	131.382	2S 2P2	2S 2P 3S	2D	2P*	32		1P*
NE 6	133.493	2S 2P2	2S 2P 3D	2D	2D*	33	*	3P*
NE 6	133.526	2S 2P2	2S 2P 3D	20	20*	22		3P*
NE 6	136.199	2S 2P2	2S 2P 3S	4 P	4P*	23		3P*
NE 6	136.268	2S 2P2	2S 2P 3S	4P	4P *	12		3P*
NE 6	136.440	2S 2P2	2S 2P 3S	4 P	4P*	21		3P*
NE 6	136.479	2S 2P2	2S 2P 3S	4P	4P *	32		3P*
NE 6	138.313	2P3	2P2 3D	2P*	2D	23		10
NE 6	138.568	2S 2P2	2S 2P 30	2 S	2P*	11		3P*
NE 6	138.614	2\$ 2P2	2S 2P 3D	2\$	2P*	12		3P*
NE 6	140.910	2S 2P2	2S 2P 3S	2 S	2P*	12		1P#
NE 6	142.608	2P3	2P2 3S	4S*	4 P	23		3P
NE 6	142.735	2P3	2P2 3S	4S*	4P	22		3P
NE 6	143.551	2P3	2P2 3S	2D*	2D	33		1D.
NE 6	144.628	2S 2P2	2S 2P 3S	2 P	2P*	11		1P*
NE 6	144.754	2S 2P2	2S 2P 3S	2P	2P*	22	-	1P*
NE 6	147.355	2S 2P2	2S 2P 3D	2P `	2D*	12		3P*
NE 6	147.481	2S 2P2	2S 2P 3D	2P	2D*	23		3P*
NE 6	147.589	2S 2P2	2S 2P 3S	2D	2P*	32	4	3P*
NE 6	147.792	2S 2P2	2S 2P 3S	20	2P*	21		3P*
NE 6	154.104	2P3	2P2 3S	2P*	2D	23		1D
NE 6	159.062	2P3	2S 2P 3P	20*	.2P	32		1P*
NE 6	159.828	2S 2P2	2S 2P 3S	25	2P*	12		3P*
NE 6	160.052	2S 2P2	2S 2P 3S	2 \$	2P*	11		3P*
NE 6	164.856	2S 2P2	2S 2P 3S	2P	2P*	22	the reserving the serving of the ser	3P*
NE 6	168.705	2S 2P2	2S2 3P.	2D	2P*	32		
NE 6	168.799	2S 2P2	2S2 3P	2D	2P*	21		
NE 6	553.578	2S 2P2	2P3	2D	2D*	22		
NE 6	553.688	2S 2P2	2P3	2D	2D*	33	• •	
NE 6	571.263	2S 2P2	2P3	25	2P*	12		
NE 6	641.922	2S 2P2	2P3	2P	2P*	22		A
NE 6	913.894	2S 2P2	2P3	2P	2D*	23		
					• • •			
NE 7	69.117	252	2S 5P	G 1S	1P*	01		
NE 7	70.994	2S 2P	2\$ 6D	3P*	3D	12		
NE 7	71.049	2S 2P	2S 6D	3P*	3D	23		
NE 7	74.481	2S 2P	2S 5D	3P*	3D	12		
NE 7	74.611	2S 2P		3P*	3D	23		
NE 7	77.309	2P2	. 2P 5D	3P ;	3D*	23		

TABLE II. - CALCULATED LINES - Continued

	CONFI		RATION	TE	RM		PARENT-1	ERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER L	IPPER
NE 7	80.573	2S 2P	2P 4P	1P#	10	12		
NE 7	82.182	2S 2P	2S 4D	3P*	30	01		
NE 7	82.207	2S 2P	2S 4D	3P*	30	12		
NE 7	85.438	2P2	2P 4D	3P	3D*	23		
NE 7	94.262	2S 2P	2P 3P	3P*	3P	11		
NE 7	94.269	2S 2P	2P 3P	3P*	3P	12		
NE 7	94.385	2S 2P	2P 3P	3P*	3P	21		
NE 7	94.825	2S 2P	2P 3P	3P*	35	01		
NE 7	94 • 867	2S 2P	2P 3P	3P*	35	11		
NE 7	95.896	2S 2P	2P 3P	3P*	3D	11		
NE 7	95.933	2S 2P	2P 3P	3P * [™]	30	22		
NE 7	103.145	2\$ 2P	2P 3P	ìP*	10	12		
NE 7	106.039	2S 2P	2S 3D	3P*	3 D	01		
NE 7	109.778	2P2	2P 3D	3P	3P*	11		2P*
NE 7	110.553	2P2	2P 3D	3P	3D*	01		
NE 7	110.590	2P2	2P 3D	3P	3D*	12		
NE 7	110.704	2P2	2P 3D	3P	3D*	22		
NE 7	115.333	2S 2P	2S 3S	3P*	38	01		
NE 7	120.222	2P2	2P 3S	3P	3P*	12		
NE 7	120.304	2P2	2P 3S	3 P	3P*	01		
NE 7	120.368	2P2	2P 3S	3P	3P*	11		
NE 7	120.456	2P2	2P 3S	3P	3P*	10		
NE 7	141.260	2P2	2\$ 3P	10	1P*	21		
NE 7	974.022	2S 2P	2P2	1P*	1D	12		
	** **	, ,						
NE 8	62.300	2P	6D	2P*	20	12		
NE 8	65.821	2P	5D	2P*	20	12		
NE 8	66.321	2 P	5\$	2P ≠	25	21		
NÉ 8	73.483	2P	4D	2P*	20	12		
NE 8	74.544	2P	4\$	2P*	28	11		
NE 8	88.120	2 S	3P	G 2\$	2P*	11	The second second second	

TABLE II. - CALCULATED LINES - Continued

		CONFIC	GURATION	TE	PARENT-TERM			
ION	WA VEL ENGTH	LOWER	UPPER	LOWER	UPPER	IJ	LOWER	UPPER
NA 2	270.052	2P6	2P5 6D	G 1S	12*K	01		2P*
NA 2	271.059	2P6	2P5 6D	G 1S	22*K	01		2P*
NA 2	273.445	2P6	2P5 5D	GIS	12*K	01		2P*
NA 2	275.448	2P6	2P5 5D	G 1S	22*K	01		2P*
NA 2	281.285	2P6	2P5 4D	G 1S	12*K	01		2P*
NA 2	282.058	2P6	2P5 4D	G 1S	22*K	01		2P*
NA 2	300.098	2P6	2P5 4S	G 1S	11*K	01		2P*
NA 2	300.986	2P6	2P5 3D	G 1S	12*K	01		2P*
NA 2	301.216	2P6	2P5 4S	G 1S	22*K	01		2P*
NA 2	301.912	2P6	2P5 3D	GIS	21*K	01		2P*
NA 2	372.540	2P6	2P5 3S	G 1S	11*K	01		2P*
NA 2	376.745	2P6	2P 5 3S	GIS	22*K	01		2P*
	3,00,	2.0	2 00					
NA 3	182.459	2P5	2P4 4D	G 2P*	2S	21	•	10
NA 3	186.271	2P5	2P4 5D	G 2P*	2 D	23		3P
NA 3	193.613	2P5	2P4 4D	G 2P*	4P	23		3P
NA 3	193.919	2P5	2P4 4D	G 2P*	2D	22		3P
NA 3	194.145	2P5	2P4 4D	G 2P*	2D	12		3P
NA 3	194.573	2P5	2P4 4D	G 2P*	2P	11		3P
NA 3	194.991	2P5	2P4 4D	G 2P*	4P	12		3P
NA 3	201.600	2P5	2P4 3D	G 2P*	28	21		1D
NA 3	206.882	295	2P4 4S	G 2P*	2P	21		3P
NA 3	207.303	2P5	2P4 4S	G 2P*	2P	22		3P
NA 3	207 • 468	2P5	2P4 4S	G 2P*	2P	11		3P
NA 3	207 • 860	2P5	2P4 4S	G 2P*	2P	12		3P
NA 3	214.730	2P5	2P4 3D	G 2P*	2F	23		3P
NA 3	215.589	2P5	2P4 3D	G 2P*	4D	23		3P
NA 3	215.625	2P5	2P4 3D	G 2P*	4P	21		3P
NA 3	216.065	2P5	2P4 3D	G 2P*	4D	12		3P
NA 3	273.069	2P5	2P4 3S	G 2P*	4P	23		3P
NA 3	273.426	205	2P4 3S	G 2P*	4P	12		3P
NA 3	284. 523	2S 2P6	2S 2P5 3S	2\$	2P*	11		3P*
NA 3	284.814	2S 2P6	2S 2P5 3S	28	2P*	12		٠, ١
NA 3	2049014	23 210	23 21 33	23	. 264	. 12		
NA 4	132.392	2P4	2P3 4D	G 3P	3P*	22		2P*
NA 4	138.189	2P4	2P3 5D	G 3P	30*	23		45*
NA 4	150.274	2P4	2P3 3D	G 3P	3D*	22		2P*
NA 4	150.685	2P4	2P3 3D	G 3P	3P*	21		29*
NA 4	150.903	2P4	2P3 3D	G 3P	3P*	11		2P*
NA 4	150.944	2P4	2P3 3D	G 3P	3P*	10		2P*
NA 4	155.412	294	2P3 3D	G 3P	35*	11		20*
NA 4	155.721	2P4	2P3 3D	G 3P	3P*	11		2D* .
NA 4	189.157	2S 2P5	2S 2P4 3S	3P*	3D	. 23		2D
NA 4	190.478	2P4	2P3 3S	G 3P	3D*	22		2D*
NA 4	215.809	2S 2P5	2S 2P4 3S	3P*	3P	22		4P
NA 5	99.194	2P3	2P2 5D	G 45*	4P	22		3P
NA 5	99.233	2P3	2P2 5D	G 45*	4P	23		3P
NA 5	101.754	2P3	2P2 5S	G 4S*	4P	23		3P
NA 5	106.063	2P3	2P2 4D	G 45*	4P	21		3P
NA 5	106.651	2P3	2P2 5D	2P*	2D	23		3P
NA 5	107.687	2P3	2P2 4D	2D*	2P	32		10
NA 5	110.677	2P3	2P2 4D	2P*	2P	22		10
NA 5	111.753	2P3	2P2 4S	G 45*	4P	23		3P
NA 5	115.648	2P3	2P2 4D	2P*	2P	11		3P
NA 5	115.724	2P3	2P2 4D	2P*	2P	22		3P
NA 5	121.508	2P3	2P2 4S	2P*	2P	11		3P
				•				

TABLE II. - CALCULATED LINES - Continued

		CONF I GUR		JRATION				RM		PARENT-TERM	
ION	WAVELENGTH	LOWER		UPPE	R	L	OWER	UPPER	JJ.	LOWER	UPPER
NA 5	131.651	2P3		2P 2	2 30		2P*	2D	12		10
NA 5	151.615	2P3			2 35		2D*	2D	22		1D
NA 5	154.426	2P3	•		2 35		2D*	2 P	22		3P
NA 5	332.362	2S22P3		2S 2P4			2P*	2P	21		
NA 5	333.622	2522P3		2S 2P4			2P*	2 P	12		
NA 5	401.231	2S22P3		2S 2P4	•		2D*	2D	22		
NA 6	91.436	2P2		2P	45	-	3P	3P*	10		
NA 6	91.510	292		2P	45	G	3P	3P*	21		
NA 6	93.676	2P2		2P	4D		15	1P*	01		•
NA 6	94.726	2P2		2P	45		1 D	1P*	21	•	
NA 6	107.663	2P2		2P	30	G	3P	3D*	11		
NA 6	113.133	2P2		2P	30		10	3F*	22		
NA 6	124.036	2P2		2P	3\$	G	3P	3P*	10		
NA 6	141 • 128	2S 2P3		2S 2P2			3P*	3P	10		4P
NA 6	152.014	2S 2P3		2S22P	3P		3D*	. 3D	33		
NA 6	160.933	2S 2P3		2S22P	3P		3P*	3 D	23		
NA 6	161.233	2S 2P3		2S22P	3P		3P*	3D	12		
NA 6	416.231	2S22P2		2S 2P3	3	G	3P	3P*	10		
NA 7	74.312	2S 2P2		2S 2P	4D		4 P	4P*	32		3P*
NA 7	77.196	2S 2P2		2\$ 2P	45		4P	.4P*	32		3P*
NA 7	77.258		2P		45	G	2P*	28	11		
NA 7	79.745	2\$2	2P	2S 2P	3P	G	2P*	· 2P	22		1P*
NA 7	79.921	2S 2P2		2S 2P	4D		2D	2D*	33		3P*
NA 7	85.320	2 \$ 2	2P	2S 2P	3P	G	2P*	25	11		3P*
NA 7	92.764	2S 2P2		2S 2P	3D		4P	4P*	11		3P*
NA 7	96.337	2S 2P2		2S 2P	30		2 S	2P*	12		1P*
NA 7	107.025	2S 2P2		2S 2P	3\$		2 S	2P*	12		1P*
NA 7	124.526	2S 2P2		282	3P		2 D	2P*	21		
NA 7	378.737	2 \$ 2	2P	2S 2P2	2	G	2P*	25	11		
NA 7	492.200	2 \$ 2	2 P	2S 2P2	2	G	2P*	20	22		
NA 7	499.528	2S 2P2		2P3	3		2 S	2P*	12		
NA 7	557 • 456	2S 2P2		2P :	3		2P	2P*	22		
NA 7	786 • 993	2S 2P2		2P3			2 P	2D*	23		
NA 7	869.629	2 \$ 2	2P	2S 2P2	2		2P*	4P	12		
NA 7	874 • 827	2\$2	2P	2S 2P2		G	2P*	. 4P	11		
NA 7	885.299	2\$2	2P	2S 2P2	2	G	2P*	4P	22		
NA 7	890.686	2 \$ 2	2P	2S 2P2	2	G	2P*	4P	21		
NA 8	58.213	25	2P	25	5D		3P*	3D	23		
NA 8	74.993	25	2 P	2P	3P		3P*	3P	.12		
NA 8	93.249	2P2		2P	3\$		3P	3P*	11		
NA 8	494.431	25	2P	2P2	-		3P*	3P	01		
NA 8	496.165	25	2P	2P.2			3P*	3P	11		
NA B	498.123	25	2 P	2P2			3P*	3P	10		v= v = 1
NA 8	499.966	25	2P	2P 2	-		3P*	3P	21		
NA 8	849.800	25	2P	2P 2	2		1P*	1 D	12		
NA10	8.979	152		18	4P	G	1\$	1P*	01		
NALC	9.434	152		1.5	3P	G	15	1P*	01		
NALO	63.606	15	2P	15	3D		3P*	3D	23		. 14

TABLE II. - CALCULATED LINES - Continued

		COI	NFIGURAT	ION		,	TE	RM		PARENT	-TERM
ION	WAVEL ENGTH	LOWE		UPPE	R	1	LOWER	UPPER	JJ	LOWER	UPPER
MG 3	161.091	2P6		2P5			15	12*K	01		2P*
MG 3	164.282	2P6	•	2P5			15	12*K	01		2P*
MG 3	171 • 247	2P6		2P5			is	22*K	01		2P*
1.0 3	2124211	2. 0		,_		•			. ••		
MG 4	132.194	2P5		294	45	G	2P*	2D	23		1D
MG 4	147.640	2P5		2P4	3D	G	2P*	· 4P	21		3P
MG 4	147.697	2P5		2P4	30	G	2P*	4P -	23	_	3P
MG 4	189.755	2S 2P6	2\$	295	3\$		25	2P*	11		3P*
MG 4	189.998	2S 2P6	28	2P5	35	•	25	2P*	12		
MG 4	320.893	2S22P5	2\$	2P6	•	G	2P*	2\$	21		**
MG 4	323.252	2S22P5		2P6		G	2P*	2\$	11	•	
				,-	,		-,				
MG 5	98.185	294		2P3	40	G	3 P	35*	21		2D*
MG 5	98 • 367	2P4	•	2P3	4D	G	3P	35*	11		2D*
MG 5	111.558	2P4		2P3	3D	G	3P	3P*	01		2P*
MG 5	115.017	2P4		2P3	.3D		1 D	1F*	23		2P*
MG 5	137.483	2P4		2P3	3 \$.	G	3P	3D*	22		2D*
								••			
MG 6	83 • 144	2P3		- 2P2			2D*	2D	33	`	3P
MG 6	83.174	2P3		2P2		_	2D*	2D	22		3P
MG 6	83 • 926	2P3		2P2		G	45*	4P	21		3P
MG 6	85•206	2P3		2P2			2P*	2D	12		3P
MG 6	87.423	2P3		2P2			2D*	2P	21		3P
MG 6	116.989	2P3		2P2	35		2P*	2D	23		1D
MG 6	320.132	2S 2P4		2P 5			2D	2P*	21		
MG 6	322.710	2S 2P4		2P5			2D	2P*	32		
MG 6	348.962	2S22P3	28	2P4			2D*	2D	22		
MG 6	440.745	2S 2P4		2P5			2P	2P*	22		
HC 7	84.058	2S 2P3	2\$	2P2	3D		3D*	30	33		2D
MG 7				2P2			3P*	3P	22		2D
MG 7	87 • 223	2S 2P3	23	2P4	50		3D*	3P	10		
MG 7	320 384	2S 2P3	. 20					3P 1P*			
MG 7	320.693	2S22P2	. 23	2P3			15	3P	01		
MG 7	321.244	2S 2P3		2P4			30*	3P	21		
MG 7	323.244	2S 2P3		2P4			3D*		32		
MG 7 MG 7	323 • 370	2S 2P3 2S 2P3		2P4 2P4			3D* 3P*	3P 3P	22 21		
	371.187										
MG 7	374.023	2S 2P3		2P4			3P*	3P	22		
MG 7	431 • 334	2\$22P2	2\$	2P3		G	3P	3D*	11	•	
MG 8	58.609	2S 2P2	25	2P	4D		4P	4P*	33		3P*
MG 8	341.927	2S 2P2	23	2P3	,,,		2D	2P#	32		J
MG 8	342.071	2S 2P2		2P3			2D	2P*	21		
MG 8	352.602	2S 2P2		2P3			4P	45*	12		
MG 8	354.014	2S 2P2		2P3			4P	4S*	22		
MG 8	780.217	2\$2	2P 2S	2P2		c	2P*	4P	23		
111 0	1000611	e J E	£	252		G	257	- 7 F	د ۽		
MG 9	74.062	2P2		2P	3D		15	1P#	01		
									-		

TABLE II. - CALCULATED LINES - Continued

					.		DADENT TOOM
			JRATION	TE			PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER
AL 1	1883.180	3 S 2 3 P	3S 3P2	G 2P*	2 S	11	
AL 1	1891.063	3S2 3P	3\$ 3P2	G 2P*	25	21	
AL 2	1762.359	2P63P2	2P63P 3D	3P	3D*	12	2P*
AL 2	1764.142	2P63P2	2P63P 3D	3P	3D*	. 11	2P*
AL 2	1764.217	2P63P2	2P63P 3D	3 P	3D*	01	2P*
AL 2	1768.663	2P63P2	2P6 3P 3D	3P	3D*	22	2P*
AL 2	1771.032	2P63P2	2P63P 3D	3P	3D*	23	2P*
AL 2	1779.257		2P63P 3D	3P	30*	21	2P*
AL 4	130.357	2P6	2P 5 3D	G 1S	22*K	01	2P*
AL 6	69.767	2P4	2P3 5D	G 3P	3D*	23	20*
AL 6	76.399	2P4	× 2P3 4S	G 3P	3P*	22	2P*
AL 6	106399	274	25 43	G Jr	J	. 22	2, .
AL 7	58.367	2P3	2P2 5D	2D*	2D	33	· 1D
AL 7	62.392	2P3	2P2 4D	G 45*	4P	21	3P
AL 7	62 • 863	2P3	2P2 4D	∫2D *	2P	32	1D
AL 7	63.028	2P3	2P2 4D	20*	2D	33	10
AL 7	64.789	2P3	2P2 4D	2D*	2F	23	3P
AL 7	65.304	. 2P3	2P2 4S	G 4S*	4P	21	3P
AL 7	65.757	2P3	2P2 4S	2 D*	2D	33	10
AL 7	67.502	2P3	2P2 4S	2D*	2P	21	3P
AL 7	69.027	2P3	2P2 4S	2P*	2P	22	39
AL 7	95.079	2\$ 2P4	2S 2P3 3S	2D	2D*	33 .	30*
AL 7	240.517	2S22P3	2S 2P4	2D*	2P	22	
AL 7	283.545	2S 2P4	2P 5	2D	2P*	21	
AL 7	286.472	2S 2P4	2P5	2 D	2P*	32	
		and the second s	2P5	2 P	2P#	22	
_AL 7	386.582	2S 2P4	275	2.5	277	22	
AL 8	49.414	2S 2P3	2S 2P2 5D	55*	5P	23	4P
AL 8	49.763	2P2	2P 5D	G 3P	3P*	22	
AL 8	50.761	2P2	2P 5D	10	1F*	23	
AL 8	54.210	2P2	2P 4D	G 3P	3P*	22	
AL 8	54.421	2S 2P3	2S 2P2 4D	3D*	3F	34	2D
AL 8	55.308	2P2	2P 4D	1 D	1F*	23	
AL 8	55.720	2P2	2P 4D	1 D	10*	22	
AL 8	57.336	2S 2P3	2S 2P2 4D	3D*	3D	33	4P
AL 8	57.588	2S 2P3	2S 2P2 4D	30*	3F	12	4P
AL 8	63.433	2 S 2 2 P 2	2S 2P2 3P	G 3P	3P*	12	4P
AL 8	63.546	2S22P2	2S 2P2 3P	G 3P	3P*	22	4P
AL 8	67.118	2S 2P3	2S 2P2 3D	5S*	5 D	23	4P
AL 8	67.500	2S 2P3	2S 2P2 3D	3D*	3P	32	2D
AL 8	68.753	29 2F3 2P2	25 2F 2 3D 2P 3D	10	1P*	21	2.0
AL 8	71.241	2S 2P3	2S 2P2 3D	3D*	3D	33	4P
AL 8	71.276			3D*			4P
AL 8		2S 2P3	2S 2P2 3D	3D*	3D 3P	22	4P
	72.794	2S 2P3	2S 2P2 3D			21	
AL 8	72.924	2S 2P3	2S 2P2 3D	3D*	3P	32	4P.
AL 8	73.404	2S 2P3	2S 2P2 3D	1 D*	1F	23	20
AL 8	76.012	2S 2P3	2S 2P2 3D	1P*	10	12	20
AL 8	81.326	2S 2P3	2S 2P2 3D	35*	3P	12	4P
AL B	83.737	2S 2P3	2S 2P2 3S	3P*	3P	.10	4P
AL 8	87.165	2S 2P3	2S22P 3P	3D*	3P	32	
AL 8	87 • 295	2S 2P3	2S22P 3P	3D*	3P	21	
AL 8	247.366	2S22P2	2S 2P3	G 3P	35*	01	
AL 8	248.448	2S22P2	2S 2P3	G 3P	35*	11	¢
AL 8	286 • 072	2S 2P3	2P4	3D*	3P	10	
AL 8	287.080	2S 2P3	2P4	30*	3P	21	
AL 8	287.627	2522P2	2S 2P3	15	1P#	01	
		-				_	

TABLE II. - CALCULATED LINES - Continued

		CONETC	ID A T I ON	TEOM		DAD CNTTEDM
• • • •	·	CONFIGU		TERM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPP ER		PER JJ	LOWER UPPER
AL 8	289•423	2S 2P3	2P4		3P 32	
AL 8	289.544	.2S 2P3	2P4		3P 22	
AL 8	323.873	2 S 2 2 P 2	2S 2P3		3P* 01	
AL 8	325.599	2S22P2	2S 2P3	G 3P	3P* 12	• •
AL 8	331.428	2S 2P3	2P4	3P*	3P 21	
AL 8	334.709	2S 2P3	2P4	3P*	3P 22	•
AL 8	381.480	2S22P2	2S 2P3	G 3P	3D* 01	to the second of
AL 8	384.128	2 S2 2 P 2	2S 2P3		3D* 11	
AL 8	387.927	2S22P2	2S 2P3		3D* 22	
AL O	3019 721	232272	23 273	U Sr	22	
AL 9	43.263	2S 2P2	2\$ 2P 5D	40	4D* 34	3P#***
		23 2P2 2P	23 2F 3D 5D		2D 12	JF*
AL 9	43.440	•				3P*
AL 9	47.445	2S 2P2	2S 2P 4D			
AL 9	48 • 894	2S 2P2	2S 2P 4S		4P* 33	3P*
AL S	49.083	2P	4\$	G 2P*	2S 21	
AL 9	49.928	2S 2P2	2S 2P 4D	2D	2F* 23	3P*
AL 9	56.344	2S 2P2	2P2 3P		2F* 34	1D
AL 9	56 - 368	2S 2P2	2P2 3P		2F* 23	1D
AL 9	60.261	2S 2P2	2S 2P 3D		P* 23	3P*
	and the second s		100 1 1			
AL 9	62.955	2P3	2P2 3D		2F 34	10
AL 9	66 • 259	2S 2P2	2\$ 2P 3D		2P* 11	3P*
AL 9	66.729	2P3	2P2 3Q		2D 23	10
AL 9	68.648	2P3	2P2 3\$		2D 33	1D
AL 9	69.143	2S 2P2	2S 2P 3D	2P 2	2D* 12	3P*
AL S	280.470	2 S 2 2 P	2S 2P2	G 2P* 2	2P 12	•
AL 9	282.673	2S2 2P	2S 2P2	G 2P* 2	2P 11	* *************************************
AL 9	286.505	2S2 2P	2S 2P2	G 2P#	2P 21	
AL 9	300.781	2S2 2P	2S 2P2		2S 11	
AL 9	305 • 163	2 S 2 2 P	2S 2P2		25 21	
AL 9	307.361	2S 2P2	2P3		2P* 32	
			2P3		2P* 21	
	307.440	25 2P2				·
AL 9	317.259	2S 2P2	2P3		\$ 12	
AL 9	318.914	2S 2P2	2P3		S* 22	****
AL 9	321.177	2S 2P2	2P3		S* 32	
AL 9	702•422	2S2 2P	2S 2P2	G 2P* 4	P 23	
	٠.					
AL10	39.627	2S 2P	2P 4P		3D 23	
ALIO	39.904	252	2S 4P	G 1S 1	LP* 01	
AL10	40.433	2S 2P	2S 5D	1P*]	ID 12	
ALIC	42.322	2S 2P	2S 4D	3P* 3	3D 01	
ALIO	42.413	2S 2P	2S 4D	3P* 3	3D 23	
ALIO	43.561	2P2	2P 4D		3D* 23	
ALIO	50.742	2S 2P	2P 3P		3P 11	
ALIO	50.920	2S 2P	2P 3P		01	
			T			
ALIO	56.611	2P2	2P 3D		3P* 01	
ALIC	56.648	2P2	2P 3D		3P* 10	
ALIO	56.717	2P2	2P 3D		3P* 12	
ALIO	56 . 948 .	2P2	2P 3D	_	3D* 01	
AL10	59.110	. 2P2	2P 3D		LD* 22	
ALIC	59.888	2P2	2P 3D	15	P* 01	The second secon
AL10	60.630	2P2	2P 3S	3P 3	3P* 12	
AL10	60.648	2P2	2P 3S	3P 3	3P ≠ 01	
AL10	60.787	2P2	2P 3S		3P* 10	* · July - Sea
			2P 3S		lP* 21	
ALIC	60.928	2P2				•
ALIO	65.281	2P2	2P 3S		LP* 01	
ALIO	395.766	2S. 2P	2P2		3P 12	
AL10	637.607	2 \$ 2	2S 2P	G 1S	3P* 01	•
AL11	36.694	28	4P	G 2S 2	2P* 12	
AL11	39.094	2 P	4D		2D 12	
			2P		2P* 12	
AL11	549.888	25				
ALII	568.771	2\$	2P	G 25 2	2P* 11	

TABLE II. - CALCULATED LINES - Continued

	*	CONET	GURATION	TF	RM	PAR ENT-TERM		
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER	
,		3S23P2		G 3P	3D*	23	2P*	
ȘI 1	1742.893	332372	3\$23P 3D	<u> </u>	307			
C T 2"	1221 441	36 303	3S 3P 3D		4D*		3P*	
SI 2	1221.641	35 3P2	3S 3P 3D	4P	40*	32		
		20/202	20/20 30	3P	3D*	~~~	2P*	
SI 3	1138.903	2P63P2	2P63P 3D			01	2P*	
SI 3	1139.394	2P63P2	2P63P 3D	3P	3D*	12		
S I 3	1140.139	2P63P2	2P63P 3D	3P	3D*	11	2P*	
SI 3	1142.791	2P63P2	2P63P 3D	3P	3D*	23	2P*	
SI 3	1143.017	2P63P2	2P63P 3D	3P	3D*	22	2P#	
SI 3	1145.164	2P63P2	2P63P 3D	3P	3D*	21	2P*	
S I 3	1148.141	2P63P2	2P63P 3D	.3P	3P*	10	2P*	
SI 3	1158.846	2P63P2	2P63P 3D	3P	3P *	21	2P*	
SI 3	1161.522	2P63P2	2P63P 3D	3P	3P*	12	2₽*	
SI 3	1165.611	2P63P2	2P63P 3D	3P	3P*	22	2P*	
		-						
SI 4	405.341	3P	75	2P*	28	21		
	.0303.2	•	, •				to a set Political and a second control	
S1 5	83.316	2P6	2P5 5S	G 1S	22*K	01	2P*	
31)	03.310	210	217 73	0 10	22 1	•		
CT /	(0.070	205	204 40	G 2P*	2P	22	10	
SI 6	69.078	2P5	2P4 4D				10	
SI 6		2P5	2P4 4D	G 2P*	2P	11		
SI 6	71 • 003	2P 5	2P4 4D	G 2P*	2P	22	3P	
SI 7	58.626	2P4	2P3 4D	G 3P	3P*	12	20*	
SI 7	60.008	2P4	2P3 4D	1 D	1D*	22	20*	
SI 7	60.943	2P4	2P3 4D	G 3P	30*	01	4S#	
SI 7	61.564	2P4	2P3 4S	1 D	1P*	21	2P*	
SI 7	63.787	2P4	2P3 4S	G 3P	3S*	21	45*	
SI 7	63.947	2P4	2P3 4S	G 3P	3S*	11	45*	
SI 7	69.677	2P4	2P3 3D	G 3P	35*	01	20*	
SI 7	70.332	2P4	2P3 3D	G 3P	3D*	01	2D*	
SI 7	246.066	2S22P4	2S 2P5	15	1P#	01		
	210000					7.7		
SI 8	46.582	2P3	2P2 5D	2D*	2F	34	10	
SI 8	50.085	2P3	2P2 4D	G 45*	4D	21	3P	
SI 8	50 • 136	293	2P2 4D	G 45*	40	23	3P	
		2P3	2P2 4D	20*	2F	34	10	
8 12	50.329						,	
SI 8	51.427	2P3	2P2 4D	2P*	2D	23	10	
51 8	61.328	2S 2P4	2S 2P3 3D	4P	4S*	32	3D*	
·SI 8	61.509	2S 2P4	2S 2P3 3D	4P	4D*	23	30*	
SI 8	61.583	2S 2P4	2S 2P3 3D	4P	4D*	12	30*	
SI 8	61.677	2S 2P4	2S 2P3 3D	4P	4P*	32	3D*	
SI 8	61.714	2S 2P4	2S 2P3 3D	4P -	4P*	33	3D*	
S 1 8	61.793	2S 2P4	2S 2P3 3D	4 P	4P*	21	30*	
SI 8	62 • 846	2P3	2P2 3D	2P*	2P	11	1D	
8 I 2	64.226	2P3	2P2 3D	2D*	2P	21	3P	
S I 8	65.773	2P3	2P2 3D	2P*	2P	11	3P	
SI 8	69.496	2P3	2P2 3S	2P*	25	21		
8 12	76 - 298	2S 2P4	2S 2P3 3S	4P	45*	12	5S *	
SI 8	250.994	2S22P3	2S 2P4	2P*	25	21	33.	
. SI 8	277.140		2S 2P4	2D*	2D	33		
21 0	2110170	2S22P3	23 ZF7	20+	20	ود		
c	43 011	25 202	20 202 40	E C +	60	22	4.0	
SI 9	43.911	25 2P3	2S 2P2 4D	55*	5P	22	4P	
.SI 9	43.940	2S 2P3	2S 2P2 4D	55*	5P	23	4P	
SI 9	46.694	2S 2P3	2S 2P2 4D	30*	3F	34	4P	
SI 9	46.774	25 2P3	2S 2P2 4D	30*	3F	23	4 P	
SI 9	52.917	2S22P2	2S 2P2 3P	G 3P	3D*	22	4P	
SI 9	53.879	2S22P2	2S 2P2 3P	G 3P	3\$*	. 11	4P	
SI 9	55.032	2P2	2P 3D	G 3P	3P*	01		
			_					

TABLE II. - CALCULATED LINES - Continued

		CDN	IF I GI	JRAT I	nn.			TF	RM		PARENT	-TERM
ION	WAVELENGTH	LOWER			JPP EF	₹ .		_OWER	UPPER	. JJ	LOWER	UPPER
SI 9	55.165	2P2	•	. `	2P	`3D		3P	3P*	12	<u> </u>	OI, EK
SI 9	55.465	2P2	-		2P	3D		3P	3D*	22		
SI 9	56.199	2\$ 2P3		25	2P2		•	.3P*	35	21		2D
SI 9	59.986	2S 2P3			2P 2	-		3P*	3D	12		4P
SI 9	60.002	2S 2P3	-		2P2			3P#	30	01		4P
\$1.9	61.732	2P2		2.5	2P	35	G	3P	3P*	11		
ŠI 9	64.941	2S 2P3		25	2P2		•	3D*	3P	- 32		4P
SI 9	65.085	2S 2P3			2P 2			3D*	3P	- 21		4P
SI 9	66.548	2S 2P3			2P2			1D*	10	22		20
ŠĪ 9	67.199	2S 2P3			2P2			3P*	3P	22		4P
SI 9	67.358	2S 2P3			2P2			3P*	3P	21		4P
\$1 9	68.950	2S 2P3			2P2			1P*	1D	12		2D
\$1.9	227.376	252272			2P3			10	10*	21		
SI 9	341.905	2S22P2			2P3	-	G	3P	3D*	01		•
• • •	- 1- - 1- 1											
S I 1 0	35.934		2P		2170.5	5D	G	2P*	20	23		
SILO	39.306	2S 2P2		2 S	2P	4D -		4P	4D*	34	•	3P*
5110	39.426		2 P	•		4D	G	2P*	2D	12		
5110	39.512		2P			4D	G	2P*	20	23	-	
5110	41.023	2S 2P2		25		4D		2 D	2F*	34		3P*
SILO	44.900	2S 2P2			2P 2			4P	45*	22		3P
SIIC	44.965	2S 2P2			2P2	3P		4P	45*	32		3P
\$110	45.603	2S 2P2			2P2	3P		4P	4P*	33		3P
5110	45.664	2S 2P2			2P2	3P		4P	4D*	34		3P
\$110	46.571	2S 2P2			2P2			2D	2D*	33	•	10
\$110	49.981	2S 2P2		25	2P	3D		4P	4P*	12		3P*
\$110	50.013	2S 2P2		25	2P	3D		4 P	4P*	21 ~		3P*
S110	50.036	2S 2P2		25	2P	3D		'4P	4P*	22 .		3P*
\$110	50.122	2S 2P2		25	2P	3D		4P	4P*	32		3P*
\$110	50.394	2S 2P2		2\$	2P	3D		4P	40*	33		3P*
S110	51.312	2S 2P2		25	2P	3D		2P	2P*	11		1P*
\$110	51.433	2S 2P2		25	2P.	3D		2P	2P*	22		1P*
\$110	51.608	2P3			2P2			45*	4P	21		3P
\$110	54.879		2P			3\$		2P*	25	11		
\$110	55.080		2P			3\$	G	2P*	28	21		~~
\$110	56.527	2P3			2P 2			4S*	4P	23		3P
\$110	56.543	2S 2P2		2\$		3\$		2P	2P*	11		1P*
\$110	56.599	2P3			2P 2			45*	4P	22	•	3P
\$110	57.304	2S 2P2		25	_	3\$		2D	2P*	21		3P*
\$110	59.949	2S 2P2		2\$	2P	3\$		25	2P*	12		3P*
5110	60.090	2S 2P2		2\$	2P	3\$		2 S	2P*	11		3P*
\$110	60.938	2S 2P2		28	2P	3\$		2P	2P*	22		3P*
SI11	36.758	2P2			2P	4D		1D	1F*	23		2P*
SIII	37.322	2\$	2P		25 -	4D		1P*	1D	12		
\$111	42.832	28	2 P		2P -	3P		3P*	3P	22		2P*
SILL	42.864	28	2 P		2P	3P		3P*	3P	21		20*
\$111	42.959	25	2 P		2P	3P		3P*	3\$	11		2P*
5111	43.045	25	2P		2P	3P		3P*	3 \$	21		2P*
\$111	43.330	25	2P		2P	3P		3P*	3D	11		2P*
\$111	43.378	25	2P		2P	3P		3P*	3D	22		2P*
\$111	46.653	2 S	2P		2P	3P		1P*	1 P	. 11		2P*
5111	47.332	2P2			2P	3D		3P	3P*	11		. 2P*

TABLE II. - CALCULATED LINES - Continued

		CONFIG	URATION	TERM	PARENT-TERM
TON:	MANELENCELL	LOWER	UPPER	LOWER UPPER	JJ LOWER UPPER
ION	WAVELENGTH		A CONTRACTOR OF THE PROPERTY O	3P 3P*	21 2P*
SILI	47.447	2P2			
SIII	47.700	2P2	2P 3D	3P 3D*	22 2P*
SILL	49,030	2S 2P	2S 3S	3P* 3S	01
SILL	49.068	2S 2P	2S' 3S	3P* 3S	11
SI11	49,200	2S 2P	2S 3S	3P* 3S	21
S111	50.487	2P2	2P 3S	3P 3P*	22 2P*
SIII	365,503	2S 2P	2P 2	3P* 3P	22
3111	3034303				
S112	32 985	· 2P	4D	2P* 2D	23
		2P	35	2P* 2S	11
5112	45.459	24	23	217 23	The state of the s
			40	c 35 30+	
SI14	4.770	18	6P	G 2S 2P*	12
S114	4.772	15	6P	G 2S 2P*	1
\$114	4.830	18	5P	G 2S 2P*	1
S114	4 832	. 15	5P	G 2\$ 2P*	12
S114	4.946	15	4P	G 2S 2P*	12
SI14	4.951	15	4P	G 2S 2P*	1
S114	5.218	is	3P	G 2S 2P*	12
		15	3P	G 2S 2P*	ī
5114	5.218			G 2S 2P*	î
S114	6.182	15	2P		
S114	6.183	15	2P	G 2S 2P*	12
P 1	1837.052	3S23P3	3\$ 3P4	2P* 2P	11
P 1	1839,333	3S23P3	3S 3P4	2P* 2P	21
P 1	1845.007	3S23P3	3S 3P4	2P* 2P	12
	••			**.	
P 2	939.165	3\$23P2	3S23P 3D	G 3P 3P*	11
P 2	975.351	3S23P2	3S 3P3	1D 3S*	21
r 2	9 () • 3 2 1	332372			6.5
0 3	705 000		36 30 46	4P 4P*	22 3P*
P 3	785 - 828	3S 3P2	3S 3P 4S		
P 3	849.176	3S2 3P	3S2 3D	G 2P# 2D	22
				to an age to the appropriate appropriate to appropriate contract	
P 4	444.448	3S 3P	3S 4D	3P* 3D	01
P 4	819.935	3S 3P	3S 3D	3P* 3D	11
Ρ 4	824.291	3S 3P	3\$ 3D	3P* 3D	22
					The state of the s
P 5	229.526	3 S	6P	G 25 2P*	11
P 5	280.142	3P	6D	2P* 2D	12
P 5	280.782	3P	6D	2P* 2D	23
P 5	294. 732	3 P	65	2P# 2S	11
P 5				2P* 2D	12
	310.494	3P	5D	=	
P 5	311.297	3P	5 D	2P* 2D	23
P 5	476.130	30	5F	2D 2F*	34
P 5	478.454	3 D	5F	2D 2F*	23
P 5	674.980	30	4F	2D 2F*	34
P 5	677.918	30	4F	2D 2F*	23
P 5	871.683	3P	3D	2P* 2D	22
_		-			
P 6	55.880	2S2ZP6	2S 2P6 3P	G 1S 1P*	01 25
, .	JJ 600	232210	23 210 31	0 10	V1
	E2 250	205	204 ED	C 20± 20	23 3P 3P
P 7	52.358	2P5	2P4 5D	G 2P* 2D	
P 7	54.669	2P5.	2P4 4D	G 2P* 2S	21 10
P 7	54.684	2P5	2P4 4D	G 2P* 2D	23 10
P 7	55.804	2P5	2P4 4D	G 2P* 2P	22 3P
P 7	56.056	2P5	2P4 4D	G 2P* 4P	23 3P
P 7	56.067	2P5	2P4 4D	G 2P* 2D	22 3P
P 7	56.362	2P5	2P4 4D	G 2P* 2P	11 3P
P 7	56.425	2P5	2P4 4D	G 2P* 4P	12 3P
P 7	57.414	2P5	2P4 4S	G 2P* 2D	23 10
r f	210414	250	254 43	J C. 20	

TABLE II. - CALCULATED LINES - Continued

			CONET	GURATION	TER	M	PAR ENT-	-TERM
	OÑ	WAVELENGTH	LOWER	UPPER	LOWER		JJ LOWER	UPPER
P	7	59.231	2P5	2P4 4S	G 2P*		12	3P
P	7	64.251	2P5	2P4 3D	G 2P*		22	10
P	7	64.340	2P5	2P4 3D	G 2P*		22	10
P	7	64 • 887	2P5	2P4 3D	G 2P*	_	11	10
•	7	66.167	2P5	2P4 3D	G 2P*		22	3P
P	7	66.353	2P5	2P4 3D	G 2P*		22	3P
P P	7	66.744	2P5	2P4 3D	G 2P*	**	11	3P
			2P5	2P4 3S	G 2P*		12	1D
Р	7	76.343	2P5	2P4 3S	G 2P*		21	3P.
P	7	77.985		2P4 3S	G 2P*		12	3P
P P	7	78.735	2P5 2P5	2P4 3S	G 2P*		22	3P
	7	79.109	2S 2P6	2S 2P5 3S	2\$		12	3P*
P	•	80 • 829	23 ZPD .	23 283 33	23	254	16	٠, ١
P	8	43 • 825	2P4	2P3 5D	G 3P	30*	23	2D*
P.	8	45.287	224	2P3 5D	G 3P		23	45*
	8	46.352	2P4	2P3 4D	G 3P		23	2P*
P P		46.462	294	2P3 4D	G 3P		22	2P*
	. 8.	47.140	2P4	2P3 4D	G 3P		21	2D*
P P	. 8	47.180	2P4	2P3 4D	G 3P		22	2D*
	8	47.236	2P4	2P3 4D	G 3P		23	20*
Ρ.	8		2P4 2P4	2P3 4D	G 3P		11	20*
P	8	47•261 47•362	2P4	2P3 4D	G 3P		12	2D*
P	. 8		2P4	2P3 4D	G 3P		12	2D*
Р	8	47.368		2P3 4D	10		23	2P*
P	8	47.438	2P4	2P3 4S	G 3P	_	22	2P*
P	8	48.226	2P4	2P3 4D	10		23	20*
Ρ	8	48.284	2P4	2P3 4D	1D	_	22 22	20*
Ρ	8	48.301	2P4	2P3 4D	10		21	2D*
Ρ.	8	48.480	2P4	2P3 4D	G 3P		01	4S*
Р	8	48.897	2P4	2P3 4D	G 3P		12	4S*
P	8	48.998	2P4 2P4	2P3 4S	G 3P	and the second second	23	20*
Р	8	49.286	_	2P3 4S	10		21	2P*
P	8	49.524	2P4	2P3 4S	10		22	2D*
P	8	50 • 482	2P4 2P4	2P3 4S	G 3P		21 ⁻	4S*
P	8	51.048	2P4 2P4	2P3 4S	G 3P		11	45*
P	8	51.188	•	2P3 3D	G 3P		22	2P*
Р	8	55 • 537 54 • 540	2P4 2P4	2P3 3D	G 3P		21	2D*
P	8	56.569						2D*
P	8 .	56.740	2P4	2P3 3D	G 3P		11	2D*
Р.	.8	56.743	2P4	2P3 3D	G 3P		21	
Р	8	56.800	2P4	2P3 3D	G 3P		22	2D* 2D*
<u>P</u>	8	56.849	2P4	2P3 3D	G 3P		01	
P	8	56.924	2P4	2P3 3D	G 3P		10	20*
P	8	56.987	2P4	2P3 3D	G 3P		12	2D* 2D*
. <u>P</u> .	8.	56 • 989	2P4	2P3 30	G 3P		01	
<u>P</u>	8	57.060	2P4	2P3 3D	G 3P		23 22	2D*
P	. 8	57.074	294	2P3 3D	10		23	2P* 2P*
·	8 8	57.193	2P4	2P3 3D	10		21	
P		57.361	2P4	2P3 3D	G 3P		01 33	2D* 2P*
<u>P</u>	8	57.387	2P4	2P3 3D	10		22	
P P P	8	59.522	2P4	2P3 3D	G 3P		12	4S*
<u></u>	8	59.595	2P4	2P3 3D	G 3P		01	45*
<u>F</u>	8	60 - 893	2P4	2P3 3D	15		01	20*
<u> </u>	8	65.754	2P4	2P3 3S	10		21	2P*
Ρ	8	66.041	2P4	2P3 3S	G` 3P		12	20*
P P	8	66 • 132	2P4	2P3 3S	G 3P		01	2D*
Ρ	8	66.240	2S 2P5	2S 2P4 3S	3P*		23	2D
P	8	70.354	2S 2P5	2S 2P4 3S	3P*	3P	22	4P

TABLE II.- CALCULATED LINES - Continued

			CONFIGURATION		TERM			PARENT-TERM
T	ON	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	IJ	LOWER UPPER
p .	9	38.033	2P3	2P2 5D	2D*	2F	34	10
P	9	41.040	2P3	2P2 4D	G 45*	4P	22	3P
P	ģ	41.074	2P3	2P2 4D	G 45*	4P	23	3P
P	ģ	41.084	2P3	2P2 4D	G 45*	4D	21	. 3P
P	ģ	41.143	2P3	2P2 4D	G 45*	4D	23	3P
P	ģ	41.430	2P3	2P2 4D	20*	20	33	1D
P	ģ	42.077	2P3	2P2 4D	2P*	2D	23	10
Ρ	9	42.319	2P3	2P2 4D	2D*	2F	34	3P
P	9	42.414	2P3	2P2 4D	2D*	2F	23	3P
P	9	42.945	2P3	2P2 4D	2P*	2D	23	3P
P	9	43.830	2P3	2P2 4S	2D*	2P	32	3P
P	9	48.931	2S22P3	2S 2P3 3P	G 4S*	4P	23	5S *
P	9	50.624	2P3	2P2 3D	G 4S*	4D	21	3P
Ρ	9.	50.650	2S 2P4	2S 2P3 3D	4 P	45*	32	3D*
Р	9	50.673	2P3	2P2 3D	G 45*	4D	23	. 3P
₽	9	50.762	2P3	2P2 3D	2D*	2P	32	10
ρ	9	50.815	25 2P4	2S 2P3 3D	40	40*	23	3D*
P	Ġ	50.815	2P3	2P2 3D	2D*	2P	21	10
P	9	50.887	2S 2P4	2S 2P3 3D	4P	4D*	12	3D *
Ρ	9	50.953	25 2P4	2S 2P3 3D	4P	4P*	32	30*
Р	9	50.991	2S 2P4	2S 2P3 3D	4P	4P*	33	3D*
P	9	51.063	2S 2P4	2S 2P3 3D	4 P	4P*	21	30*
Ρ	9	51.129	2P3	2P2 3D	2D*	2F	23	10
ρ	9	51.133	2P3	2P2 3D	2D*	2 D	22	1 D
P	9	51.682	2P3	2P2 3D	.2P*	28	21	10
Р	9	51.839	2P3	2P2 3D	2P*	2P	22	10
P	9	51.877	2P3	2P2 3D	2P*	2P	11	10
P	9	52.203	2P3	2P2 3D	2P*	2D	12	10
Ρ	ς	52.939	2P3	2P2 3D	2D*	2P	21	3P
P	9	52 . 955	2P3	2P2 3D	2P*	2D	23	. 3 <u>P</u>
P	9	52.977	2P3	2P2 3D	2P*	20	12	3P
Ρ	ς	52.999	2P3	2P2 3D	20*	2P	32	3P
Р	9	54.124	2P3	2P2 3D	2P*	2P	.11	38
Ρ	9	54.178	2P3	2P2 3D	2P*	2 P	22	3P
P	9	55.066	2S 2P4	2S 2P3 3D	4P	4D*	34	55*
P	9	55.300	2S 2P4	2S 2P3 3D	4P	4D*	12	5S*
P	9	56.966	2P3	2P2 3S	2P*	2S	21	36
P	9	58.988	2P3	2P2 3S	20*	2P	32	3P
P	9	59.081	2P3	2P2 3S 2P2 3S	2P* 2D*	2D 2P	23 21	3P
P	9	59.155	2P3 2P3	2P2 3S	20+ 2P*	2P	22	3P
P	9	60•439 60•595	2P3	2P2 3S	2P*	2P	11	3P
P	9	61.701	2S 2P4	2S 2P3 3S	4P	45*	32	5°S****
P	9	61.895	25 2P4	2S 2P3 3S	4P	45*	22	5S*
0	9	61.978	2S 2P4	2\$ 2P3 3S	4P	45*	12	
P	9	196.890	2S22P3	2S 2P4	2D*	2P	22	55₹
P	9	211.335	2S22P3	2S 2P4	2P*	2P	īī	
P	ĝ	211.628	2522P3	2S 2P4	2P*	2P	21	
P	Ś	213.917	2S22P3	2S 2P4	2P*	2P	12	
P	ģ	214.476	2S22P3	2S 2P4	2P*	2P	22	• •
P	ģ	226.970	2S22P3	2S 2P4	2P*	2\$	11	5 5 611 A 127 CO
P	9	227.605	2S22P3	2S 2P4	2P*	28	21	
P	ģ	250.395	2522P3	2S 2P4	20*	20	22	•
P	9	250.786	2S22P3	2S 2P4	20*	2D	33	THE PLANE SHAPE AND ADDRESS OF THE PARTY.
P	9	278 .44 7	2S22P3	25 2P4	2P*	2D	12	
P	9	279.249	2S22P3	2S 2P4	2P*	2D	23	
r	7	61786T7	200617			==		

TABLE II. - CALCULATED LINES - Continued

			CONFIGURATION				TERM			PAR ENT-TERM		
10	ON	WAVELENGTH	LOWER		PPER	t = '	ŧ	OWER	UPPER	JJ	LOWER UPPER	
P	10	36.523	2S 2P3		2P2			55*	5P	22	4P	
	1 C	36.560	2S 2P3	2\$	2P2		_	5S*	5P	23	40	
	10	36.767	2P2		2P	40		3P	30*	12		
	10	36.793	2P2		2P	4D	G,	3P	3D*	23	· · · · · · · · · · · · · · · · · · ·	
	10	38.669	2S 2P3		2P2			30*	3F	34	4P	
	10	38.755	2\$ 2P3			4D		3D*	3F	23 22	4P 2D	
	10	43.051	2S22P2		2P2		٠.	10 10	1D*		20	
	10	43.245	2\$22P2		2P2	3P 3P	C	3P	1F*	23 12	4P	
	10 10	44.348	2\$22P2 2\$22P2		2P2	3P	G	3P	3D* 3D*	23	4P	
	10	44.371 44.446	2522P2 2522P2		2P2	3P	Ğ	3P	3D*	22	4P	
	10	45.172	2522P2		2P2	3P	Ğ	3P	35*	11	4P	
	10	45.287	2 \$2 2 P 2		2P2	3P	Ğ	3P	35*	21	4P	
	10	45.997	2P2		2P	3D	G	3P	3P*	01		
	10	46.067	2P2		2P	30	G	3P	3P ≠	10	\$ 4 - 1 - 4 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
	10	46.087	2P2		2P	3D	G	3P	3P*	11		
	10	46.140	2P2		2P	3D	G	3P	3P*	12	And the same of th	
*	10	46.199	2P2		2P	3D	G	3P	3P*	21		
Ρ	10	46.233	2P2		2P	3 D	Ğ	3 P	3P*	22		
	10	46.241	2P2		2P	3D	G	3P	3D*	01	***	
P	10	46 • 294	2P2		2P	3D	Ğ	3 P	3D*	12		
P	10	46.330	2P2		2P	3D	G	3 P	3D*	23		
P	10	46.392	2P2		2P	3D	G	3 P	3D*	22		
	10	46.431	2S 2P3		2P2	3D		3D*	3D	33	20	
	10	46.644	2S 2P3			3D		3D*	3F	34	20	
	10	46.726	2S 2P3		2P2	3D		3P*	3\$	21	20	
	10	47.697	2S 2P3	25		30		3P*	30	23 22	20	
	10	48.052	2P2 2P2		2P 2P	3D 3D		1D 1S	3F* 1P*	01		
	10	48.116	2F2 2S 2F3	2 S		3D		3D*	3D	33	4P	
	10 10	48.391 48.985	25 2P3			3D		3D*	3F	34	4P	
	10	49.078	25 2P3	25	2P 2			30*	3F	23	4P	
	10	49.147	2S 2P3	25	2P2			3D*	3F	12	4P	
								3P*		23	4P	
	10	49.772	2S 2P3	2 S	2P2 2P2	3D		3P*	3D 30	12	4P	
	10	49.789	2\$ 2P3 2\$ 2P3		2P 2	3D		3P*	3D	01	4P	
	1 C	49.794	2\$ 2P3 2\$ 2P3		2P2		,	5S*	5P	23	4P	
	10 10	50.664 50.778	25 2P3	2 S	2P2			5S*	5P	22	4P	
	1 C	50•778	2S 2P3	28	2P 2			55*	5P	21	4P	
	10	50.874	2S 2P3		2P2			3P*	3P	22	4P	
	10	51.006	2P2	_•	2P	35	G	3P	3P*	12		
	10	51.091	2P2		2P	35	G	3P	3P*	01		
	10	51.096	2S 2P3	25	2P2	3\$		3D*	30	33	20	
	10	51.147	2P2		2P	35	G	3 P	3P*	22		
Ρ :		52.641	2S 2P3	2\$	2P2	35		3P*	3D	23	20	
P	10	53.610	2S 2P3		2P2			3D*	,3P	32	4P	
P	10	53.737	2S 2P3	2\$	2P2			3D*	3P	21	4P	
Ρ	10	53.841	2P2	•	2P	3\$		1 S	1P*	01		
P	10	54.811	2S 2P3		2P2			1D*	1D	22	20	
	10	55.286	2S 2P3		2P 2			3P*	3P	22	4P	
	10	55.435	2S 2P3		2P2			3P*	3P	21	4P 20	
P		56.575	2S 2P3		2P2	35	_	10*	10	12	20	
	10	203 • 869	2S22P2		2P3			3P	35*	01		
P		205.418	2 S 2 2 P 2		2P3		G	3P	35*	11 21		
	10	207 • 377	2\$22P2		2P3		^	10	1P*	21		
	10	207.733	2 S 2 2 P 2		2P3		G	3P 1D	3S* 1D*	22		
	10	235.293	2\$22P2		2P3 2P3			15	10* 1P*	01		
	10	236.655	2 \$2 2 P 2 2 \$2 2 P 2		2P3		·	3 P	3P*	01		
ρ	TO.	263.261	2 3 2 2 F 2	23	273		U	J1	JF *	71		

TABLE II. - CALCULATED LINES - Continued

	CON		JRATION	TERM	PAR ENT-TERM	
ION	WAVEL ENGTH	LOWER	UPPER	LOWER UPPER	JJ LOW	ER UPPER
P 10	265.454	2S22P2	2S 2P3	G 3P 3P*	11	
P 10	265.661	2S22P2	2S 2P3	G 3P 3P*	12	
P 10.	269.577	2S22P2	2S 2P3	G 3P 3P*	21	
P 10	269.718	2S22P2	25 2P3	G 3P 3P*	22	
. 10	20 76 110	232272	23 253	G SF SF+	22	
P 11	30.166	2P	5 D	G 2P* 2D	23	
P 11	33.050	2S 2P2	25 2P 4D	4P 4D*	34	3P*
P 11	330 102	′ 2P	4 D	G 2P* 2D	12	
P 11	33.174	2P	4 D	G 2P* 2D	23	
P 11	34.351	2S 2P2	2\$ 2P 4D	2D 2F*	34	3P*
P 11	38.230	2S 2P2	2P2 3P	4P 4S*	22	3P
P 11	38.294	2S 2P2	2P2 3P	4P 4S*	32	3P
P 11	38.843	2S 2P2	2P2 3P	4P 4P*	33	3P
P 11	38.845	2S 2P2	2P2 3P	4P 4D*	34	3P
P 11	39.541	2S 2P2	2P2 3P	2D 2D*	33	10
P 11	42.189	2S 2P2	2S 2P 3D	4P 4P*	12	3P*
P 11	42.217	2S 2P2	2S 2P 3D	4P 4P*	21	3P*
P 11	42.239	2S 2P2	2\$ 2P 3D	4P 4P*	22	3P*
P 11	42.321	2S 2P2	2S 2P 3D	4P 4P*	32	3P*
P 11	42.349	2S 2P2	25 2P 3D	4P 4P*	33	3P*
P 11	42.413	25 2P2 25 2P2	2S 2P 3D	4P 4D*	12	3P*
P 11			25 2P 3D	4P 4D*	33	3P*
	42.551	2S 2P2				1P*
P 11	42.798	2S 2P2		-	11 .	-
P 11	42.925	2S 2P2	2S 2P 3D	2P 2P*	22	1P*
P 11	43.463	2P3	2P2 3D	4S* 4P	21	3P
P 11	43.815	2S 2P2	2S 2P 3D	2P 2D*	12	1P*
P 11	43.888	2\$ 2P2	2\$ 2P 3D	2P 2D*	23	1P*
P 11	44.238	2S 2P2	2S 2P 3D	2D 2F*	23	3P*
P 11	44.961	2S 2P2	25 2P 3S	20 2P*	32	1P*
P 11	44.988	2S 2P2	2\$ 2P 3D	2D 2D*	33	3P*
P 11	45.011	2S 2P2	2\$ 2P 3D	2D 2D*	22	3P*
P 11	45.685	2S 2P2	2S 2P 3S	4P 4P*	23	3P*
P 11	45.747	2S 2P2	25 2P 3S	4P 4P*	12	3P*
P 11	45.793	2S 2P2	2S 2P 3S	4P 4P*	33	3P*
P 11	45 • 892	2S 2P2	25 2P 3S	4P 4P*	21	3P*
P 11	45.921	2S 2P2	2\$ 2P 3\$	4P 4P*	32	3P*
P 11	47.280	2S 2P2	2S 2P 3S	2P 2P*	11	19*
P 11	47.414	2S 2P2	25 2P 3S	2P 2P*	22	1P*
P 11	47.446	2S 2P2	2\$ 2P 3D	2P 2D*	23	3P*
P 11	47.455	2P3	2P2 3S	4S* 4P	23	3P
P 11	47.502	² P3	2P2 3S	4S* 4P	22	3P
P 11	47.796	2S 2P2	2S 2P 3S	2D 2P*	32	3P*
P 11	47.859	2S 2P2	2S 2P 3S	2D 2P*	21	3P*
P 11	49.866	2S 2P2	2S 2P 3S	2S 2P*	12	3P*
P 11	49.976	2S 2P2	25 2P 3S	2S 2P*	11	3P*
P 11	50.635	2S 2P2	2S 2P 3S	2P 2P*	22	. 3P*
P 12	31.097	2P2	2P 4D	10 1F*.	23	2P*

TABLE II. - CALCULATED LINES - Continued

		CONFI	GURATION		TERM		PARENT	-TERM
ton	WAVELENGTH	LOWER	UPPER	LOW		JJ	LOWER	UPPER
P 12	31.515	2S 2P	25 4	D 19	* 1D	12		
P 12	36.629	2S 2P	2P 3	P 3P		22		2P*
P 12	36.654	2S 2P	2P 3		_	21		2P*
P 12	36.715	2S 2P	2P 3			11	•	2P#
P 12	36.794	2S 2P	2P 3					_
			_			21		2P*
P 12	37.026	2S 2P	2P 3			11		2P*
P 12	37.065	2S 2P	2P 3	-		22		2P*
P 12	38.632	2S 2P	2P 3			12		2P*
P 12	39.622	2S 2P	2P 3	-		11	-	2P*
P 12	40.134	2P2	· 2P 3	D 3P	3P*	11		2P*
P 12	40.251	2P2.	2P 3	D 3P	3P*	21	-	2P*
P 12	40.292	2P2	2P 3	D 3P	3P*	22		2P*
P 12	40.377	2P2	2P 3	D 3P	30*	. 12		2P#
P 12	40.416	2P2	2P 3			23		2P*
P 12	40.463	2P2	2P 3			22		2P*
P 12	40.600	2P2	2P 3			23		2P*
P 12	41.506		25 3		-			. 25 -
		2S 2P		_		01		
P 12	41.533	2S 2P	2S 3	-		11		-
P 12	41.666	2S 2P				21		
P 12	41.691	2P2	2P 3			22		2P*
P 12	42.653	2P2	2P 3	S 3P	3P*	22		2P*
P 12	44.036	2S 2P	2S 3	S 1P	* 1S	10		
P 12	335.308	2S 2P	2P2	3P	* 3P	22		
P 12	536.552	252	2S 2	P G 1 S	3P*	01	*	
					_			
P 13	28.154	2 P	. 4	D 2P	* 2D	23		
P 13	37.562	2P	3	_	N 114 N	12		
P 13	37.704	2P	. 3			23	····	
, 13	210104	21	. 3	<u>2</u> F	7 20	23		1 to 187 and all to 1974, to 2
P 15	4 154		. 6		* * ***	12		
	4.154	15						*** * * ** ***
P 15	4.208	15	5		_	12		
P 15	4.307	15	41			12		
P 15	4.544	18	31			12		
P 15	5• 385	15	21	P G 25	2P *	12		
								•
S 2	774.697	3S23P3	3S23P2 3		Anna and a second as a second as a	22		3 P
S 2	775.651	3 S 2 3 P 3	3S23P2 3	-		21		3P
S 2	777.426	3S23P3	3 S 2 3 P 2 3			23		3 P
S 2	785.263	3 S 2 3 F 3	3523P2 3	D 20		22		10
S 2	799.410	3S23P3	3523P2 3			23		1D
S 2	799.801	3S23P3	3S23P2 3	D 20	* 2F	34		10
S 2	848.488	3 S 2 3 F 3	3523P2 3	D 20	* 2P	21		3P
S 2	£49.270	3S23P3	3523P2 3			22		3P
S 2	£56.939	3 S 2 3 P 3	3S23P2 3			33		3P
			3 S 2 3 P 2 3					
	662.679	3 S Z 3 P 3	3 S 2 3 P 2 3			32		3P
	862.843	3S23P3						
S 2 S 2 S 2	540.405	3 S2 3 P 3	3S23P2 4			. 22		10
S 2	1134.510	3 \$2 3 P 3	3S 3P4	20		22		
S 2	1305.830	3\$23P3	35 3P4	2 P		12		•
S 2	1306.314	3S23P3	35 3P4	2 P		22		
S 2	1308.432	3S23F3	3S 3P4	2 P	* 2D	23		
S 3	685.288	3S23P2	3 S 2 3 P 4	S G 3P	3P*	12		2P*
S 3	687.027	3523F2	3 S2 3P 4	S -G 3P	3P*	01	*	2P# :
S 3	688.374	3S23P2	3523P 4			11		2P*
\$ 3	650.008	3S23P2	3S23P 3			23	**	2P#
\$ 3	691.702	3S23P2	3 S 2 3 P 3			īī		
S 3	1017.497	3\$23P2 3\$23P2	3\$ 3P3	G 3P		10		
	1011.4771	336386	J.J. J.F.J	ų Jr	J	20		

TABLE II. - CALCULATED LINES - Continued

			CONFIGURATION		TERM			PARENT-TERM			
10	3N	WAVELENGTH	LOWER	ι	PPE	₹ `	L	OWER	UPPER	JJ	LOWER UPPER
S	4	391.291	352 3	P	352	4D	G	2P*	2D	12	
\$	4	392.765	382 3	P	352	4D	G	2P*	20	23	
S	4	660.092	382 3	P	352	3 D	G	2P*	2 D	22	•
S	4	660.607	35 3P2	35	3P	3D		4P	4P*	11	3P*
S	4	662.103	3S 3P2	3 S	3 P	3D		4P	4P*	21	3P*
S	5	319.604	35 3	P	3 S	4D		3P*	3 D	01	
S	5	319.831		!P	3 S	4D		3P*	3D	12	
S	5	32C.582		P	35	4D		3P*	3 D	23	
S	5	567.784		.D		4F		3D	3F*	34	
S	5	568.090		1D	38	4F		3 D	3F*	23	
S	5	568.35C		D	38	4F		3 D	3F*	12	
S	5	659.073	3S 3	P	. 3S	3 D		3P*	3 D	11	
S	5	662.639	35 3	P	3.5	3D		3P*	3 D	22	
S	6	203.792	3	P		6D		2P*	2 D	12	
S	6	204.331	3	P		6D		2 P*	2 D	23	
S	6	251.201	3	P ·		5\$		2P*	25	11	
S	6	328.936	3	D		5F		2 D	2F*	23	•
S	ó	328.981	3	:D		5F		2D	2F*	34	
S	6	465.096	3	!D		4F		2 D	2F*	23	
S	6	465.431		D		4F		20	2F*	34	
S	7	48.363	2522P6	2.5	2P6	3 P	G	15	1 P*	01	28
S .	10	192.717	2522F3	2.5	2P4			2P*	2P	11	
S .	11	39.001	2S 2P3		2P2			55*	5P	21	4P
-	11	39.023	25 2F3		SP2			5 S*	5 P	22	4P
S	_	39.049	2S 2F3		2P2	3D		5S*	5P	23	4P
S	11	285.626	2 S 2 2 F 2	2 S	2P3		G	3 P	3D*	12	
S	11	291.424	2522P2	25	2P3		G	3 P	3D*	23	
	12	35.983	2S 2P2		2 P	3D		2 D	2F*	34	1P*
S		36.336	2S 2P2	2 S	2P	3 D		4P	4D*	23	3P*
S	12	37.135	2F3		2P2			4S*	4 P	2.2	3P
S	12	37.176	2 F 3		2P2	3D		45*	4P	23	3P
S	12	37.607	25 272	25	2 P	3 D		2D.	2F*	34	3P*
S		31.950		P	2P	3P		3P*	30	23	
S	13	32.238	252		25	3 P	G	15	1 P*	01	
S		33.822		P	25.	3D		3P*	3 D	C1	•
S		35.681		P	25	3 D		1 P*	10	12	
S	13	257.845	252		25	2P	G	15	1P*	C,1	
s	14	30.416		? S		3P	G	2 S -	2P*	12	
Š		30.526		25		3P		25	2P*	iì	
Š		33.392		P		35		2P#	25	21	
J	• 7	220376	•	. •		, ,		21.0	23	4 4	

TABLE II.- CALCULATED LINES - Continued

-		CCNFIG	URATION	TERM		PARENT-TERM
LON	WAVELENGTH	LOWER	UPPER	LOWER UP	PER JJ	LOWER UPPER
CL 1	833.304	3S23P5	3S23P4 5S	G 2P* 2	D 22	10
CL 1	1087.665	3\$23P5	3S23P4 3D	G 2P* 2	D 23	10
CL 1	1143.120	3S23P5	3S23P4 3D	G 2P* 2	D 22	10
CL 1	1155.222	3S23P5	3523P4 3D	G 2P* 2	D 12	1 D
ÇL 2	602.792	3P4	3P3 3D		P* 22	2P*
CL 2	6C2.795	364	3P3 3D		P* 21	2P*
CL 2	605.395	3F4	3P3 3D		P* 21	20*
CL 2	6(6.925	3F4	3P3 3D		P* 01	2P#
CL 2	627.712	3P4	3P3 3D	-	.F* 23	2P*
CL 2	651.616	3F4	3P3 3D		S* 11	20*
CL 2	653.111	3P4	3P3 3D		S* 01	20*
CL 2	671.493	3P4	3P3 3D		P* 01	20*
CL 2	673.900	3F4	3P3 3D	-	D* 22	2P*
CL 2	708.984	3P4	3P3 3D	-	F* 23	20*
CL 2	760.338	3F4	3P3 4S		D* 22	20*
CL 2	765.752	3P4	3P3 4S	G 3P 1	D* 1.2	2 D *
CL 3	694.514	3\$23P3	3 S2 3 P2 3 D	20* 2	F 34	3P
CL 3	696.853	·3\$23P3	3S23P2 3D	2D* 2	F 23	3 P.
CL 3	697.184	3S23F3	3S23P2 3D	2D* 2	F 33	3P
CL 3	849.496	3\$23P3	3S 3P4	2D* 2	P 22	
CL 3	E51.917	3S23F3	3S 3P4	2P* 2	S 11	
CL 3	852.874	3\$23P3	35 3P4	2P* 2	S 21	
CL 3	929.617	3S23P3	3S 3P4	2P* 2	P 11	
CL 3	930.363	3\$23F3	3S 3P4	2P* 2	P 21	
CL 3	935.919	2\$23P3	35 3P4	2P* 2	P 12	
CL 3	1040.492	3\$23F3	3S 3P4	2P* 2	D 12	
CL 3	1041.349	3S23F3	3S 3P4	√2P* 2	D 22	
CL 3	1042.286	3\$23P3	3S 3P4	2₽* 2	D 23	
CL 4	525.344	3\$23P2	3S23P 3D	1D 1	F* 23	
CL 4	53C.651	3523P2	3S23P 3D		F* 23	2P*
CL 4	839.837	3S23P2	3S 3P3	_	P* 2	ζ.
CL 4	985.612	3 S 2 3 F 2	3S 3P3		D* 21	
CL 5	285.230	3\$2 3P	3S2 4D	G 2P* 2	D 12	
CL 5	286.608	352 3P	3S2 4D			
	200.000	332 38	332 40	G 2P* 2	D 23	
CL 6	1009.614	352	3S 3P	G 1S 3	P* 01	25
CL 7	133.053	3\$.	6P	2S 2	P* 12	
CL 7	162.595	3P	65		S 21	
CL 8	38.117	2P6	2P5 6D	G 1S 1	2*K 01	2P*
CL 8	38.300	2P6	2P5 6D	_	2*K 01	2P*
CF 8	40.504	2F6	2P5 5S		2*K C1	2P*
CL12	33.553	2S 2P3	2S 2P2 3D	5S* 5	P 21	4P
CL12	33.570	2S 2F3	2S 2P2 3D	-	P 22	4P
CL12	33.592	2S 2P3	2S 2P2 3D		P 23	4P
CL12	262.305	2S22P2	2S 2P3		D* 12	••
CL12	268.425	2522P2	2S 2P3		D* 23	•
	_	= ,		· - · - · - · - · - · - · - · · - ·		

TABLE II. - CALCULATED LINES - Continued

		CONFIG	FATION	TERM		PARENT-TERM
ION	WAVELENGTH	LCWER	UPPER	LOWER UPP	ER JJ	LOWER UPPER
CL13	21.178	25 2P2	2S 2P 3D	2D 2F		1P*
CL13	31.447	25 2F2	2S 2P 3D	4P 4D	* 23	3P*
CL13	32.083	2P3	2P2 30	45* 4P	22	3P
CL13.	32.124	2P3	2P2 3D	4S* 4P	23	3 P
CL13	32.445	25 2F2	2S 2P 3D	2D 2F	* 34	3P.*
CL14	27.880	. 25 2P	2P 3P	3P* 3D	23	
CL14	28.108	252	25 3P	G 1S 1P		
CL14	29.403	2S 2P	2S 3D	3P* 3D		
CL14	235.999	252	2S 2P	G 1S 1P		
CL15	26.615	25	3P	G 2S 2P	* 12	
CL15	26.762	2 S	3P	G 2S 2P		
CL15	29.006	2 9 2 P	35	2P* 2S		
0225	27,000		,,,	2 23		
CL16	3.779	152	1S 3P	G 1 S 3 P	* 01	
CL16	4.447	152	1S 2P	G 1S 3P	* 01	
AR 1	980.482	3P6	3P5 3D	G 1 S 1 P	* 01	2P*
		3. 3	3, 3, 36	3 13 1.		•, ,
AR 3	405.192	3F4	3P3 5S	G 3P 3\$		45*
AR 3	468.114	3P4	3P3 3D	G 3P 3D		2P*
AR 3	468.567	3P4	3P3 3D	1D 1D		2P*
AR 3	469.749	3F4	3P3 3D	10 1F		2P*
AR 3	470.662	3P4	3P3 3D	G 3P 3D		2P*
AR 3	471.494	2P4	3P3 3D	G 3P 3D		2P*
AR 3	471.666	364	3P3 3D	G 3P 3D	_	2P*
AR 3 AR 3	486.236	3P4	3P3 3D	10 1P	-	20*
AR 3	496.315 496.753	2P4	3P3 4S	1D 1P		2P*
AR 3	499.710	3P4 3P4	3P3 4S 3P3 4S	G 3P 1D G 3P 1D		2D*
AR 3	502.751	3P4	3P3 3D	1D 3D		2D* 2P*
AR 3	507.577	3P4	3P3 4S	10 30 10 3P		2P#
AR 3	533.952	3P4	3P3 4S	1D 1D		2D*
A'R 3	536.354	364	3P3 3D	1S 1P		2D*
AR 3	541.326	3P4	3P3 3D	1D 1F		20*
AR 3	622.051	3F4	3P3 3D	10 10		2D*
AR 4	254.913	3S23P3	3S23P2 4D	G 4S* 4P	22	3P
AR 4	295.022	3523F3	3 S2 3 P2 4D	G 4S* 4P		3P
AR 4	295.165	3\$23P3	3 S 2 3 P 2 4 D	G 4S* 4P		3 P
AR 4	366.429	3 S 2 3 F 3	3S23P2 4D	2D* 2D		3 P
AR 4	313.399	3 S 2 3 F 3	3523P2 4D	2D* 2F	34	3 P
AR 4	314.523	3S23F3	3523P2 4D	2D* 2F		3 P
AR 4	406.031	3\$23P3	3 S2 3P2 4S	2D* 2D		10
AR 4	406.271	3S23F3	3\$23P2 4\$	2D* 2D	33	1 D
AR 4	426.153	3S23P3	3S23P2 4S	2D* 2P	21	3 P
4R 4	430.048	3\$23P3	3S23P2 4S	2P* 2D	12	1 D
AR 4	430.393	3S23F3	3S23P2 4S	2P* 2D	23	10
AR 4	442.561	3 S2 3 P 3	3 S2 3 P2 3 D	2D* 2F	23	10
AR 4	450.198	3\$23P3	3 S 2 3 P 2 4 S	2P* 2P	12	3 P
AR 4	45C.525	3 S 2 3 F 3	3 S 2 3 P 2 4 S	2P* 2P	22	3 P
AP 4	452.645	3S23P3	3S23P2 4S	2P* 2P	11	3 P
AR 4	452.971	3 S 2 3 P 3	3 S2 3P2 4S	2P* 2P	21	3 P
ΔR 4	458.924	3523P3	3 S 2 3 P 2 3 D	2D* 2D	22	10

TABLE II.- CALCULATED LINES - Continued

		CCNFIGURATION			TE	RM	PARENT-TERM		
ION	WAVELENGTH	LOBER	UPPER		LOWER	UPPER	JJ	LOWER	UPPER
AR 4	459.183	3\$23P3	3S23P2	3D	20*	20	32		1D
AR 4	473.548	2S23P3	3 S 2 3 P 2		2 P*	2P	12		io
AR 4	473.925	3S23P3	3523P2		2P*	2P	. 22.		10
AR 4	484.984	3523F3	3\$23P2		2D*	20	33		3P
AR 4	486.158	3S23P3	3S23P2		20*	2D	22		3 P
AR 4	486.475	3S23P3	3 S 2 3 P 2		20*	2D	32		3P
AR 4	493.201	3S23P3	3S23P2	3D	20*	2P	21		3 P
AR 4	495.542	3S23P3		3D	2D*	2P	22		3P
AR 4	495.832	_3\$23P3	3 S2 3P2	30 .	. 2D*	2P	32		3P
AR 4	526.138	3S23P3	3S23P2	3D	2D*	2F	34		3 P
AR 4	527.202	3S23P3	3\$23P2	30	2D*	2F	23		3P
AR 4	527.588	3\$23P3	3523P2	30	20*	2F	33		3 P
AR 4	529.320	3S23P3	3523P2		2P*	2P	21	•	3P
AR 4	531.587	3\$23P3	3 S 2 3 P 2		2 P*	2 P	12		3 P
AR 4		3S23P3	3S23P2		2P*	2P	22		3 P
_AN_3	532.039	336373	3343F.4 .	טכ	227	.27	22		, 32
									5/2 (1.1
AR 5	238.327	3S23P2		5S .	10	1P*	21		2P*
AR 5	378.303	3S23P2		45	15	1P*	01		2P*
AR 5	57C.929	3523P2	35 3P3		10	3 S*	21		•
AR 5	646.135	3S23P2	3S 3P3		15	1P*	01		
AR 5	711.342	3 S 2 3 P 2	35 3P3		G 3P	3P*	11		
AR 5	711.488	3523P2	3S 3P3		G 3P	3P*	12	•	
AR 5	715.549	3523P2	3S 3P3	•	G 3P	3P*	2		
							•		•
AR 6	283.594	35 3F2	3S 3P	45	4P	4P*	32		3P#
40.7	102 045	20.00			204				
AR 7	192.065	3S 3P	· · · · · · · · · · · · · · · · · · ·	4D	3P*	3D	11		
AR 7	192.664	25 3P	war war and a series of the se	4D	3P*	30	22		
AR 7	487.620	2P63P2		3 D	3P	3D*	01		2 P*
AR 7	487.814	2P63F2		3D	3P	3P*	1 C		2P#
AR 7	488.753	2PE3P2	2P63P	3 D	3 P	3D*	12		2₽#
AR 7	489.715	2P63P2	2P63P	3 0	3P	30*	11		2P*
_AR 7	492.593	2P63P2	2F63P	30	3P.	3D*	23		2P*
AR 7	492.967	2P63P2	2P63P	3D	3P	30*	22		2P*
AR 7	494.249	2P63P2		3D	3P	3D*	21		2P*
AR 7	496.417	2P63P2		30	3P	3P*	21		2P*
AR 7	496.521	2F63P2		30	3P	3P*	12		2P*
		ATTENDED		er trauer					
AR 7	50C-920	2P63P2		30	3 P	3P*	22		2P*
AR 7	876.817	352	3\$	3 <u>P</u>	G 15	3P*	01		25
			emperio pereme resistenti il stituto						
AR 9	36.722	2S22P6	2522P5		G 1S	11*K	01		2P*
AR 9	37.021	2S22P6	2S22P5	45	G 15	22*K	C1		2P*
AR10	36.540	2S22P5	2522P4	30	G 2P*	20	23		15
AR10	36.757	2522P5	2522P4		G 2P*	20	12		15
	<u></u>		್ ಬಹ್ಮಾ ಗರ್ಕ್ ವಿಪ್ ಕ	-	→ →, ·	. =			. 7%
AR11	34.811	2S22P4	2522P3	30	10	1F*	23		20*
AR11	35.088				10	10*	22	ē	
AR11		2S22P4	2\$22P3						20*
	39.800	2522P4	2S22P3	52	15	1P*	01		2P*
AR11	165.585	2522P4	25 2P5		1,5	1P*	01		
AR14	27.501	2\$ 2P2	2,5 2P 3	3 D	4P	4D*	34		3P*
					*				
AR15	25.804	25 2P	28	3D	3P*	30	12		
AR15	25.8CE	25 2P	25	3 D	3P*	30	23	·	

TABLE II. - CALCULATED LINES - Continued

			CONFIGU	RATION	TE	RM		PARENT-TERM
IC	N	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JĴ	LOWER UPPER
	2	504.184	3P6	3P5 3D	G 15	1P*	01	2P*
Κ, :	3	440.709	3\$23F5	3S23P4 4S	G 2P*	20	2.2	10
	3	478.546	3 \$23P5	3 S2 3P4 4S	G 2P*	4P	21	3P
κ	<u>-</u>	287.849	3\$23F4	3 S2 3 P3 4D	G 3P	3D*	23	45*
	4	289.561	3\$23P4	3 S 2 3 P 3 4 D	G 3P	3D* •	12	4S*
	4	290.335	3\$23P4	3523P3 4D	G 3P	3D*	01	45*
	4	342.750	394	3P3 4S	G 3P	3P*	11	2P*
	4	343.568	3 P 4	3P3 4S	G 3P	3P*	01	2P*
4.4	4	351.226	3S23P4	3 S2 3P3 4S	G 3P	3₽*	11	2₽*
	4	352.069	3S23P4	3S23P3 4S	G 3P	3P*	01	2P*
	4	381.010	3P4	3P3 3D	15	1P*	01	2P*
	4	383.565	3P4	3P3 4S	G 3P	35*	21	4S*
	4	385.276	352394	3S23P3 4S	G 3P	35*	21	45*
K	4	385.792	3P4	3P3 4S	15	1P*	01	2P*
K	4	386.997	3P4	3P3 4S	G 3P	35*	01	4S*
K	4	388.738	3\$23P4	3523P3 45	G 3P	35*	01	45*
K	4	396.640	3S23P4	3523P3 4S	G 3P	55*	22	4S*
K	4	413.928	3F4	3P3 3D	1D	3P*	21	2P#
K	4	590.435	3523P4	3523P3 3D	G 3P	5C*	01	45*
K	4	£5 4. 688	3\$23P4	35 3P5	. 10	3P*	22	the transfer of the second second
κ.	5	225.221	3S23P3	3523P2 4D	G 4S*	40	22	30
	5	225.376	3S23P3	3S23P2 4D	G 4S*	4P	23	3P
	5	225.537	3523F3	3 S 2 3 P 2 4 D	G 4S*	4 P	21	3 P
K	5	231.825	3S23P3	3523P2 4D	2D#	20	33	3P
	5	238.489	3\$23P3	3523P2 4D	2D*	2F	34	3P
K	5	239.340	3S23F3	3523P2 4D	2D*	2F	23	3P
ĸ	6	180.272	3S23P2	3 S 2 3 P 5 S	10	1P*	21	2 P*
K	6	266.207	3\$23P2	3523P 4S	10	19*	21	2P*
K	6	266.430	3\$23P2	3S23P 4S	10	1 P*	21	• •
K	6	282.856	3\$23P2	3523P 45	18	1P*	01	2P*
K	6	384.875	3S23P2	3 \$2 3 P 30	G 3P	30*	21	
K	6	389.472	3523P2	3S23P 30	G 3P	30*	. 12	2P*
K	6	389.516	3\$23P2	3S23P 30	G 3P	30*	11	2₽*
K	6	453.427	3S23P2	35 3P3	G 3P	19*	01	
K	6	583.424	3S23F2	3S 3P3	18	1P#	01	
K	6	613.743	3523P2	3S 3P3	G 3P	3P*	01	
	6	621.657	3S23P2	35 3P3	G. 3P	3P*	11	
K	6	621.874	3523P2	35 3P3	G 3P	3P*	12	
K	6	624.756	3\$23P2	3S 3P3	G 3P -	3P*	21	
K	6	624.821	3523P2	3S 3P3	G 3P	3P*	22	
K	6	726.712	3523P2	35 3P3	G 3P	30*	21	and the second s
Ŕ	7	141.784	352 3P	3 \$ 2 5 D	G 2P*	20	12	
K	7	142.365	352 3P	3S2 5D	G 2P*	20	23	
K	7	221.583	35 3F2	35 3P 45	4 P	4P*	22	3₽*
	7	401.565	3S 3P2	35 3P 3D	4P	4P*	11	3₽*
	7	402.922	3S 3P2	3S 3P 3D	4P	4P*	12	3₽+
	7	403.377	3S 3P2	35 3P 3D	4P .	4P#	21	3P*
	7	406.105	3S 3P2	35 3P 3D	4P	4P*	23	3P*
	7	407.564	35 3P2	3S 3P 3D	4P	4P#	32	3P*
	7	408.950	35 3P2	35 3P 3D	4P	4P*	33	3P*
K	7	672.951	352 3P	35 3P2	G 2P*	20	22	•

TABLE II. - CALCULATED LINES - Continued

		CONFIGU	CONFIGURATION			TERM			-TERM
ION	MAVELENGTH	LCWER	UPPER		LOWER	UPPER		LOWER	UPPER
K 8	123.729	3S 3P	35	5 D	3P*	30	12	25	2 S
K 8	123.893	25 3P	35	5D	3 P*	3 D	23	25	25
K B	143.804	3 \$ 2	3\$	4P	G 15	1P*	01		25
K 8	230.664	3S 3D	35	4F	3D	3F*	12		
K 9	230.703	2\$ 3D 25 3D	3S 3S	4F 4F	3D	3F* 3F*	23	2.5	26
K 8 K 8	230.733 230.755	2 S 3 D	3 S	⇔r 4F	3 D 3 D	3F*	12 34	25	25
K 3	230.757	35 30 35 30	35	4F	3D	3F*	34	25	28
K 8 -	230.774	2S 2D	3 5	4F	3D	3F*	23	25	25
ĸ ŝ	425.423	2 P 6 3 P 2	2 P 6 3 P	3D	3 P	3P*	10		2P*
к в	429.935	296392	2 F 6 3 P	3D	3 P	3C*	01		2P*
K 8	431.041	2P6 2P2	2P63P	30	3P	3D*	12		2P*
K 8	432.110	2P63F2	2P63P	3D	3 P	3D*	11		2P*
к я	435.317	2P63P2	2P63P	3 D	3P	3D*	23		2F*
к в	435.562	2P63P2	2 F 6 3 P	3D	3 P	3D*	22		2P*
К 8	435.991	2P63P2	2F63P	3D	3 P	3P*	21		2P*
K 8	437.234	296392	2P63P	30	3P	3P*	12		2P*
K 8	437.238	2P63P2	2F63P	3 D	3 P	30*	21		2P*
K 8	442.001	2P63P2	2P63P	3 D	. 3P	3P*	22		2P*
K 8	557.609	3S 3P 3S 3P	2P63P2		3P*	3P	12		
_K_8	561.941 564.849	3S 3P 3S 3P	2P63P2 2F63P2		3P*	3P	22		
<u>K 8</u> <u>K 8</u>	569.694	3S 3P	2P63P2		3P*	3P	10		
_K 8	572.969	3S 3P	2P63P2		3P*	3P	21		
			,210,512		3, ,	٠,			
K 9	98.870	3 S		5P	G 2S	2P*	1.1		
K 9	58,8C8	38	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5P	G 2S	2P*	12		
<u>K 9</u>	99.395			6D	2 P*	20	12		
K 9	99.770	<u> 3P</u>		6D.	2P*	_ 2D	23		
<u>K 9</u>	119.095	3 P		55	2P*	25	. 11		1
<u>K</u> 9	119.934	3P		5S.	2P*	2 S	21		
_K9'.	467.599	3P	* > ** **	3 D	2P*	, 2 D	. 22		
K 10	26.514	2P6	2P5	6D	G 1S	12*K	01		2P*
K 10	26.627	2P6	2P5	6D	G 1S	22*K	01		2P*
K 10	27.480	2F6	2P5	50	G 15	12*K	Cl	•	2 P#
K 11	31.327	2P5	2P4	3 D	G 2P*	2D	23		15
K 11	31.487	2S22P5	2S22P4	3D .	G 2P*	2D .	23		15
<u>K 11</u>	31.696	2522P5	2S22P4	3D	G 2P*	2 D	12		15
K 11	32.297 32.317	2P5 2P5	2P4 2P4	3D 3D	G 2P* G 2P*	2D 2P	23 22		10 10
K 11	32.895	2P5	2P4	3D	G 2P*	2D	23		3 P
K 11	32.982	2P5		30	G 2P*	2P	11		3P
K 11		2P5	2P4		G 2P*	2P	22		3 P
K 11	33.134	2P5	2P4		G 2P*	2P	21		3P
K 11	33.259	2P5	294		G 2P*	4D	22		3 P
K 11	35.602	2 S2 2 P 5	2S22P4		G 2P*	25	21		15
K 11	35.713	2P5	_ 2P4		G 2P*	20	12		3P
_K_11_	35.896	2S22P5	2 S 2 2 P 4		G 2P*	25	11	•	15
K 11	37.616	2S22P5	2S22P4		G 2P*	2P	11		3P
_K_11	38.056	_2S22P5	2,S22P4		G 2P*	4P	12		3 P
K 11	38.193	2S 2P6	2S 2P5		2S	2P*	11		3P*
<u>K 11</u>	38.355	2 S 2 P 6	2S 2P5	33	25	2P*	12		3P*

TABLE II. - CALCULATED LINES - Continued

-	er man en elektrolik man kantak aprila ere ere ere ere ere	CONF	IGURATION	ATION TE		TERM		PARENT-TERM		
ION	WAVELENGTH	LOVER			ι	OWER	UPPER	JJ	LOWER	UPPER
K 11		2S 2P6	2S 2P	5 38		2 S	2P#	12		
K 12	30.157	2 S 2 2 P 4	2 S 2 2 P	3 3 D		1 D	1F*	23		20*
K 12	30.387	2S22P4	2S22P	3 30		10	10*	22		2D*
K 12		2522P4	2 S 2 2 P	3 30	G	3 P	30*	23	•	45*
K 12	33.961		2S22P	3 3 5		1D	10*	22		2D*
K 12	34.128	2 S 2 2 P 4	2 S 2 2 P	3 35	G	3 P	35*	21		45*
K 12	34.199		2S22P			15	1P*	C1		2P*
K 12			2 S 2 2 P		G	3 P	35*	11		45*
K 13	30.100	2522P3	2S22P	2 35	G	4S*	4P	23		3P
K 13	157.878	2522P3	25 2P	4		2P*	2 P	22		
K 13		2S22P3	2S 2P	4		2P*	25	11		
K 13		2 S2 2 P 3	2S 2P	4		2P*	25	21		
K 13	178.181	2S22P3	2S 2P	4		2D*	2D	- 22		÷.
K 13	179.484	2522P3	2S 2P	4		2D*	2 D	33		
K 13	202-104	2S22P3	2S 2P	4		2 P*	, 2 D	23		
K 14	147.599	2 \$2 2 P 2	2S 2P	3	G	3 P	35*	01		
K. 14	150.537	2S22P2	2S 2P	3		3 P	35*	11		
K 14	151.761	2 S 2 2 P 2	2S 2P	3		1 D	10*	21		
K 14		2S22P2	25 2P	3	G	3 P	35*	21		
K 14	172.181	2S22P2	2S 2P	3		1 D	10*	22		
K 14	175.397	2 S 2 2 F 2	2S 2P	3		15	1P*	01		•
K 14	185.918	2522P2	2S 2P	3	G	3P	3P*	01		
K 14	190.509	2S22P2	25 2P	3	G	3 P	3'P*	11		
K 14	195.459	2 S 2 2 P 2	2S 2P	3	G	3 P	3P*	22		
K 14	196.222	2S22P2	2S 2P	3	G	3 P	3P*	21		
K 15	24.237	25 2P2	2S 2P	3 D		4 P	4D*	34		3P*
K 16	22.726	25 2	P 2S	3 D		3P*	30	23		
K 16	22.779	25 2	P 2S	3D		3₽*	3 D	12		
K 19	2.585	. 1	S	6P	G	25	2P*	1	,	
K 19	2.615	. 1	S	5P	G	2 S	2 P*	1		

TABLE II. - CALCULATED LINES - Continued

		CCNFIC	BURATION	TE	RM	PARENT-TERM		
ICN	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER	
CA 3	301.790	3P6	3P5 5S	G 15	11*K	01	2P*	
CA 3	304.333	3P6	3P5 5S	G 1S	22*K	01	2P*	
CA 3	410.762	3P6	3P5 4S	G 15	22*K	01	2P*	
CA 4	325.704	3\$23F5_	3523P4 3D	G 2P*	2 D	22	10	
CA 4	329.062	3\$23P5	3S23P4 3D	G 2P*	2 D	12	10	
CA 4	338.580	3\$23P5	3523P4 45	G 2P*	2P	12	3 P	
CA 5	223.639	3523P4	3523P3 40	G 3P	30*	23	45*	
CA 5	225.315	3S23P4	3S23P3 4D	G 3P	3D*	12	45*	
CA 5	226.123	3S23P4	3 S 2 3 P 3 4 D	G 3P	30*	01	45*	
CA 5	287.060	3P4	3P3 4S	G 3P	35*	11	45*	
CA 5	288.255	3S23P4	3S23P3 4S	G 3P	35*	_ 11	45*	
CA 5	293.169	3S23P4	3523P3 4S	G 3P	5S*	22	45*	
CA 5	516.642	3S23P4	3S23P3 3D	G 3P	3D*	23	45*	
CA 5	521.821	3S23P4	3 S 2 3 P 3 3 D	G 3P	30*	11	45*	
CA 5	522.552	3S23P4	3S23P3 3D	G 3P	3D*	12	4S*	
CA 5	524.267	3S23F4	3523P3 3D	G 3P	30*	01	45*	
CA 5	533.498	3S23P4	3523P3 3D	G 3P	50*	01	45*	
CA 5	749.900	3S23P4	3S 3P5	10	3P*	22		
CA 6	333.512	3523P3	3\$23P2 3D	G 4S*	4P	21	3P	
CA 6	334,938	3523P3	3523P2 3D	G 45*	4P	22	3P	
CA 6	335.233	3\$23P3	3S23P2 3D	G 45*	<u>4P</u>	23	3P	
CA 7	209.780	3S23P2	3S23P 4S	10	1P*	21		
CA 9	120.133	352	3S 4P	G 1S	1P*	01	2\$	
CALO	82.265	3P	6D	2P*	20	12	na anna a a anna ann an Air an Air an Air ann ann ann an ann ann ann an Air an an ann ann an Air an Air an Air	
CA10	82.612	3P	60	2P*	2D	23		
CALO	82.800	35	5P	G 2S	2P*	12		
CALO	82.866	35	5P	G 2S	2P*	11		
CALO	99.445	3P	55	2P*	. 28	11		
CA10	123.786	3P	4 D	2P*	20	22		
CA12	28.018	2P5	2P4_3D	G 2P*	2P	22	10	
CA12	28.119	295	2P4 3D	G 2P*	2D	23	10	
CALZ	28.508	295	2P4 3D	G 2P*	2 D	23	3P	
CA12	28.667	2P5	2P4 3D	G 2P*	2P_	22	3 P	
CA12	28.738	2P5	2P4 3D	G 2P*	2P	21	3P	
CA12	28.799	295	2P4 3D	G 2P*	4D	22	3P	
CALZ	28.883	2 P 5	2P4 3D	G 2P*	2P	11	3P	
CA12	29.606	2 F 5	2P4 3D	G 2P*	20	12	3P	
CA12	33.028	2S 2P6	25 2P5 3S	25	2P*	12	3P*	
CA12	33.041	2S 2P6	2S 2P5 3S	25	2P*	12		

TABLE II. - CALCULATED LINES - Continued

ION	WAVELENGTH			TERM		PARENT-TERM		
		LOWER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
SC 3	302.663	3P6 3D	3P5 302	G 2D	2D*	22	15	
SC 3	363.438	3P6 3D	3P53D2	G 2D	20*	33	15	
SC 3	305,907	3P6 3D	3P53D2	G 2D	2F*	34	1S	
SC 3	307.027	3F6 3D	3P5302	G 2D	2F*	23	<u> 15</u>	
SC 5	184.984	3P5	3P4 4D	G 2P*	20	22		10
SC 5	185.632	3P5	3P4 4D	G 2P*	2 D	23		10
SC 5	186.296	3F5	3P4 4D	G 2P*	2P	22		10
SC 5	186.520	3P5	3P4 4D	G 2P*	20	12		10
SC 5	186.643	3F5	3P4 4D	G 2P*	25	21		1D
SC 5	187.796	3P5	3P4 4D	G 2P*	2P	12		10.
SC 5	188.219	3P5	3P4 4D	G 2P*	25	11		10
SC 5	189,776	3523F5	3S23P4 5S	G 2P*	2 D	23		10
SC 5	190.752	3P5	3P4 4D	G 2P*	2F	23		3 P
SC 5	191,536	3P5	3P4 4D	G 2P*	4F	23		3 P
SC 5	192.298	365	3P4 4D	G 2P*	20	22		3P
ŞC 5	192.617	3P5	3P4 4D	G 2P*	20	23		3 P
SC 5	193.878	3P5	3P4 4D	G 2P*	20	12		3 P
ŞC 5	377.104	3\$23P5	3 \$2 3P4 3D	G 2P*	20	23		3 P
SC 5	380.206	3S23P5	3\$23P4 3D	G 2P*	`20	22		3P_
SC 5	386.494	3\$23P5	3 S2 3P4 3D	G 2P*	20	12		3P
SC 6	277.657	3F4	3P3 3D	G 3P	10*	12		2P*
SC 6	292.122	3P4	3P3 3D	G 3P	1P*	21		2D*
SC 6	256.949	3P4	3P3 3D	G 3P	3P*	11		2P*
SC 6	258.166	3P4	3P3 3D	G 3P	3P*	12		2P*
SC 7	3C2.50C	3 S 2 3 F 3	3523P2 3D	20*	20	22		10
SC 7	303.098	3 S 2 3 P 3	3 S 2 3 P 2 3 D	20*	20	32		10
SC 7	3(8,353	3\$23P3	3\$23P2 3D	2P*	2P	12		10
SC 7	309.181	3S23P3	3523P2 3D	2P*	2 P	22		10
SC 7	354.171	3523F3	3523P2 3D	2P*	2P	21		3P
_SC_7_	357.289	3\$23P3	3S23P2 3D	2 P*	2 P	12		3P
SC 7	358.433	3S23P3	3 S 2 3 P 2 3 D	2P*	2P	22		3P
SC 7	488.866	3\$23P3	35 3P4	2P*	25	11		
SC 7	491.004	3\$23P3	35 3P4	2P*	25	21		
SC 8	295.432	3\$23P2	3S23P 3D	G 3P	3D*	21		
SC 8	355.842	3\$23P2	35 3P3	G 3P	1P*	01		
SC 8	556.110	3S23P2	3S 3P3	G 3P	3D*	01		
SC B	562.827	3S23P2	3 S 3 P 3	G 3P	30*	12		
SC 8	563.041	3523P2	3S 3P3	G 3P	3D*	11		·
SC 8	571.688	3S23P2	3S 3P3	G 3P	3D*	23		· · · · · · · · · · · · · · · · · · ·
SC 8	573.106	3523P2	3S 3P3	G 3P	30*	22		
SC 9	94.517	352 3P	3 S 2 5 D	G 2P*	2D	12		·
SC 9	95.025	3S2 3P	3S2 5D	G 2P*	20	23		
SC 9	317.841	3S 3P2	3S 3P 3D	4P	4D*	12		3₽*
SC 9	318.612	3S 3P2	3S 3P 3D	<u>4P</u>	4D*	11		`3P*
SC 9	319.515	35 3F2	3S 3P 3D	4P	4D*	23		3P*
SC 9	219.988	3S 3P2	35 3P 3D	4P	4D*	22		3P*
SC 9	320.765	35 3P2	3S 3P 3D	4P	4D*	21		3P*
SC 9	322.639	35 3P2	3 S 3 P 3 D	4P	40*	34		3P*
SC 9	322.711	3S 3P2	3 S 3 P 3 D	4P	4D*	33		3P*
SC 9	323.194	3S 3P2	3S 3P 3D	4P	4D*	32		3P*
SC 9	384.473	3,523P	35 3P2	G 2P*	2 P	12		
SC 9	386.195	352 3P	3S 3P2	G 2P*	2P	12		
SC 9	390.221	3\$23P	35 3P2	G 2P*	2 P	11		

TABLE II. - CALCULATED LINES - Continued

		URATION	TE	TERM			PARENT-TERM		
ICN	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	11	LOWER	UPPER	
SC 9	392.867	3S23P	3S 3P2	G 2P*	2P	22	1		
SC 9	399.755	3 S 2 3 P	3S 3P2	G 2P*	2P	21			
SC 9	426.741	3S 3P2	3P3	4P	45*	32			
SC 9	451.452	3S23F	3S 3P2	G 2P*	2D	22	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
SC 9	\$22.265	3S2 3P	35 3P2	G 2P*	2 D	12			
	643.388	3523P	35 3P2	G 2P*	20	23	*		
SC 9	6424360	33234	20 212	G 2,	20		***	. (
SCIO	338.340	35 3P	2 S 3D	3P*	3D	11			
SC10	422.234	352	3S 3P	G 1 S	1P*	01			
SC10	449.283	3S 3P	3P.2	3P*	. 3P	12	2 S		
SC10	455.237	3S 3P	3P2	3P*	3P	01	25		
SC10	458.116	3 S 3 P	3P2	3P*	3 P	22	25		
SC10	459.387	3S 3P	3P2	3P*	3P	11	25		
SC10	464.977	3 S 3 P	3P2	3P*	3 P	10	25		
SC10	468.673	2S 3P	3P2	3P*	3P	21	25		
	· · · · · · · · · · · · · · · · · · ·	and the second	- · ·	-	_				
SC11	382-072	. 3P	30	2P*	20	23			
SC11	382.692	3P	3 D	2P*	2 D	22			
SC11	383.500	3P	30	2 P#	20	22			
SC11	505.252	3\$		G 2S	2P*	12			
SC11	522.765	3S	3P	. , G . 2S . , .	2P*	11			
SC12	21.935	2S22P6	2522P5 4D	G 15	12*K	01		2P*	
SC12	22.107	2522P6	2S22P5 4D	G 1 S	22*K	01		2P*	
SC12	22.875	2S22P6	2522P5 4S	G 1S	11*K	01		2P*	
SC12	23.002	2S22P6	2522P5 4S	G 1 S	22*K	01		2P*	
SC13	24.241	2P5		G 2P*	2.D	12		15	
SC13	24.623	2P5	2P4 3D	G 2P*	2 P	21		10	
SC13	25.282	2F5	2P4 3D	G 2P*	2P	12		3P	
SC14	122.700	2S22P4	2S 2P5	1 D	1P*	21			
SC14	132.930	2S22P4	25 295	15	1P*	01			
SC14	145.168	2S22P4	2 S 2P 5	G 3P	3P*	21			
SC14	148,573	2S22P4	2S 2P5	G 3P	3P*	10			
SC14	150.574	2522P4	2S 2P5	G 3P	3P*	22			
SC14	151.959	2S22P4	2S 2P5	G 3P	3P*	11			
SC14	152.971	2S22P4	2S 2P5	G 3P	3₽*	01	*		
SC14	157.911	2S22P4	2\$ 2P5	G 3P	3P*	12	• •		
				e a ve r etion e	₹.*.				
SC15	119.080	2S22P3	2S 2P4	20*	2 P	21			
SC15	124.233	2S22F3	2S 2P4	2D*	2 P	22			
SC15	125.871	2\$22P3	25 2P4	20*	2 P	32			
SC15	170.090	2S22P3	2S 2P4	G 4S*	4P	21			
SC15	173.413	2S22P3	2S 2P4	G 45*	40	22			
20.12									

TABLE II. - CALCULATED LINES - Continued

The second secon		CONFIG	CONFIGURATION			TERM				PARENT-TERM		
ION	WAVELENGTH	LONER		t	Ĺ	OWER	UPPER	JJ	LOWER	UPPER		
TI 3	1431.728	302	30	4P		3 P	1P*	21	•	2 D		
TI 3	1434.696	302	3 D	4P		3P	3P*	11		2 D		
					_							
T1 4	254.198	3P6 3D	3P53D2			2 D	2D*	23				
TI 4	254.404	3P6 3D	3 P 5 3 C	45		2D	2D*	22		3D*		
<u>TI 4</u>	254.425	3P6 3D	3 P 5 3 D 2			2D	20*	32		204		
T1 4	254.692	3P6 3D	3 P 5 3 D	4 \$		2D	2D*	32	• •	3D*		
<u>TI 4</u>	256.374	3P6 3D	3F53C2			2D	20*	22	18			
TI 4	256.946	3P6 3D	3P53D2			2D	2D*	33	18	204		
<u>TI 4</u>	257.284	3P6 3C	3P53C	45		2D	2D*	23		3D* 3D*		
<u>TI 4</u>	257.430	3P6 3D	3F53D	45		2D	20*	33		3D*		
<u>TI 4</u>	259.332	3P6 3D	3P5 3D	45		20	4D*	33		30*		
<u>TI 4</u>	259.522	3P6 3D	3P53D	45		20	4D*	34		3P*		
<u>TI 4</u>		3P6 3D	3 P 5 3 D	45		2D	4P*	32				
<u>TI 4</u>	264.647	3P6 3D	3P53D	4S		20	2P*	21		3P* 3F*		
<u>TI 4</u>	266.577	3P6 3D	3P53D	45		20 20	2F* 2F*	33		3F*		
TI 4	267.039	3P6 3D	3P530	4S				33 34		3F*		
<u>TI 4</u>	268.361	3F6 3D	3 P 5 3 D	45		2D	2F*	22		3P*		
TI 4	268.932	3P6 3D	3P53D	4S		20	2P* 4F*	34		3F*		
<u>II 4</u>	270.113	3P6 3D	3 P 5 3 D	45		2D	4F*	23		3F*		
<u>TI 4</u>	271.197	3P6 3D	3P53D	45		20 20		34	15	364		
<u>II 4</u>	264.538	3P6 3D	3P53D2		-	_	2F*	23				
T.I 4.	284.973	3P6 3D	3P53D2		G	20	2F*	23	15			
	163.076	3P6	3P5	58.		15	11*K	01		2P*		
TI 5	164.445	⁻ 3P6	3P5	58	G	15	22*K	01		2P*		
TI 5	170.159	3F6	3P5	4D		15	12*J	01		2P*1		
TI 5	171.950	3P6	3P 5	40		15	23*J	01		2P*2		
TI 5	229.155	3P6	3P5	45	G	15	22*K	01		2P*		
TI 6	203.890	3S23P5	3 S 2 3 P 4	45	G	2P*	4P	12		3 P		
T1 7	123.622	3P4	3P3	55	G	3 P	35*	21		45*		
TI 7	124.335	3P4	3P3			3 P	35*	11		45*		
TI 7	124.535	3F4	3P3			3 P	35*	01		45*		
TI 7	169.853	3P4	3P3			3 P	10*	12		20*		
TI 8	257.453	3S23F3	3S23P2	3D		2D*	2P	21		3 P		
TI 8	301.500	3S23P3	3 S2 3P2	30		20*	2 P	22	er fired et er i er e e e e e e e e e e e e e e e e	3P		
TI 8	302.429	3S23P3	3 S 2 3 P 2			2D*	2P	32		3P		
TI 8		3S23P3	35 3P4		G	45*	4P	21	*** *** ** *** ***********			
TI 8	505.035	3\$23P3	3S 3P4			45*	4P	22				
II 9	136.585	3S23P2	3 S2 3P	45		2 D	3P*	12		2P*		
TI 9	137.137	3523P2	3 S 2 3 P	45		3.F	3P*	01		2P*		
TI 9		3523P2 3523P2				3P	3P*	22	· · · · · · · · · · · · · · · · · · ·			
TI 9	137.364 137.723	3523P2 3523P2	3 S 2 3 P 3 S 2 3 P	45 45		3P	3P*	11		2P# 2P#		
TI 9	137.947	3 S 2 3 P 2	3523P	45		3P	3P*	10		2P#		
TI 9	138.510	3\$23P2	3 \$ 2 3 P	45			3P*	21		2P*		
TI 9	280.450	3S23P2	3 S 2 3 P	3D		3 P	3P*	01		2P*		
TI 9	324.841	3 S 2 3 P 2	3S 3P3	بايد		3 P	1P*	11		<u> </u>		
TI 9	329.283	3S23P2	3S 3P3			3P	1P*	21				
TI 9	335.974	3\$23P2	3S 3P3			3P	35*	01				
TI 9	447.975	3S23P2	3S 3P3			3P	3P*	2				
	77 1 9 7 1 0 7 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			•. • · · ·								

TABLE II. - CALCULATED LINES - Continued

******	CONFIGURATION		TERM		PARENT-TERM		
ION	WAVELENGTH	LCHER	UPPER		PPER JJ	LOWER UPPER	
T110	The sales of the contract of t	3\$2 3P	3S2 4D		20 12	15 15	
1110	101.163						
TIIO	101.902	3S2 3P	3S 2 4D		20 23	<u> 15 15</u>	
T110	123.035	2S 3P2	3S 3P 4S	THE R. LEWIS CO., LANSING MICHIGAN PROPERTY AND PROPERTY	4P* 23	3P*	
TILO	123.329	35 3F2	3S 3P 4S	4P	4P* 12	3P*	
TIIO	123.658	3S 3P2	3S 3P 4S		4P* 33	3P#	
T110	124.185	3S 3P2	35 3P 4S		4P* 21	3P*.	
T110	124.382	35 3F2	3S 3P 4S		4P* 32	3P*	
T110	125.601	3S2 3P	3S2 4S	G 2P*	<u> 25 11 </u>	<u> 15 15 </u>	
TILO	126.800	3S2 3P	352 45		25 21	1S : 1S	
T110	289.720	3\$2 3P	3S2 3D	G 2P*	2D 12	15 15	
TILO	255.677	3S2 3P	3S2 3D	G 2P*	2D 23	15 15	
TIIO	256.148	3S2 3P	3S2 3D		20 22	15 15	
T110	355.923	3S2 3P	3S 3P2		2P 11	15	
T110	360.185	3S2 3P	3S 3P2		2P 22	15	
T110	365.69C	3S2 3P	35 3P2		2P 21	15	
TIIO	378.040	3S2 3P	3S 3P2		25 11	15	
TILO	389.243	352 3P	35 3P2		25 21	15	
IIIO	489.278	3S2 3P	35 3F2		20 23	15	
1.110	407.216		33 3F Z	U ZFT	20 23		
IIII	71.351	3S 3P	3S 5D	3 P*	3D 12	<u>2</u> S 2S	
TILL	90.843	3S 3C	3S 5F	3 D	3F* 34		
T111	53.377	35 3P	3S 4D	3P*	3D 01	2S 2S	
T111	113.946	3S 3P	35 45	3P*	3S C1	25 25	
T111	125.608		3S 4F	30	3F* 23	<u> </u>	
		35 3D 35 3D			3F* 12	2S 2S	
T111	125.940					25 25	
TIII	125.979	3S 3D	3S 4F		3F* 23	2 <u>S</u> 2 <u>S</u>	
T111	126.017	35 3C	35 4F		3F* 12		
TILL	126.160	3S 3C	3S 4F	3 D	3F* 34		
TIII	295.992	3S 3P	3S 3D	.3P*	3D 01	2S 2S	
TILL	257.698	35 3P	3S 3D		30 12	25 25	
TIII.	302.093	3S 3P	3Ş 3D		3D 23	2S 2S	
T111	302.884	3S 3P	3S 3D	3P*	3D 22	2\$ 2\$	
T.111	306.907	3S 3P	3S 3C	3P*	3D 12		
TILL	307.336	3S 3P	3 S 3D	3 P*	3D 11		
TILL	312.206	3S 3P	35 30	3P*	30 23		
T111	386.775	352	3S 3P	G 15	1P* 01	25	
TILL	415.024	3S 3P	3P2	3P*	3P 01	2\$	
T111	573.683	352	3S 3P	G 15	3P* 01	2\$	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
T112	27.616	2P6 3S	2P53S2	G 25	2P* 11		
T112	27.922	2P6 3S	2P53S2	G 2S	2P* 12		
T112	82.524	3 C	5F	20	2F* 23		
T112	135.861	30	4P	20	2P* 32		
T112	140.338	30	. 4P	20	2P* 21		
T112	34C.972	3 P	30	2P*	2D 12		
T112	35C.126	3 P	30		20 23		
T112	351.226	3 F	30	2P*	20 22		
T112	459.893	35	3P	G 2S	2P* 12		
T112	479.339	25	3P	G 2S	2P* 11		
			- ·				
T113	21.027	2S22P6	25 2P6 3P		1P* 01	25	
T113	21.065	2S22P6	2S 2P6 3P		1P* 01		
T113	21.121	2S22P6	2S 2P6 3P		3P* 01	28	
T113	21.150	2S22P6	2S 2P& 3P	G 15	3P* 01		
				•			

TABLE II. - CALCULATED LINES - Continued

	. The second sec		CCNFIGU	RATICN	TE	ERM		PARENT-TERM	
tai	N .	KAVELENGTH		UPPER	LOWER	UPPER	IJ	LOWER UPPER	
V		1013.407	303	3D2 4P	G 4F	40*	44	A3P	
	3	1C15.950	3C3	302 4P	G 4F	40*	54	A3P	
V		1017.400	303	302 4P	G 4F	4D#	22	A3P	
V	3	1018.515		302 4P	G 4F	40*	43	A3P	
	3			302 4P	G 4F	4D*	32	A3P	
	3	166.172	303	3D2 4P	2G	2H*	56	AIG	
V	3	1116.932	303	3D2 4P	4P	4P*	23	A3P	
	3	1118,796	303	302 4P	4 P	4P*	33	A3P	
V	3	1120.433	303	3D2 4P	4P	4P*	22	A3P	
	3	1123.320	303	302 4P	40	40*	32	A3P	
		1124.172	303	3D2 4P	2H	2H*	66	A1G	
V			303	302 4P	G 4F	20*	33	A3F	
	3	1133.182	303	302 4P	G 4F	20*	43	A3F	
V	3	1137.129	303	3C2 4P	G 4F	40*	54	A3F	
	3		303	302 4P	G 4F	4D*	43	A3F	
V	3	1141.816	363	3D2 4P	G 4F	40*	32	A3F	
	3	1146.845	303	302 4P	4P	4D*	34	A3P	
V	3	1151.171	303	302 4P	4P	4D*	23	A3P	
<u>v</u>	3	1151.689		302 4P	G 4F	2F*	54	A3F	
	3			222	4P	40*	12	43P	
V	3	1153.664	203		G 4F	2F*	43	A3F	
		1158.982	3C3	3D2 4P	G 4F	4F*	45	A3F	
<u>v</u>	3	1160.979	303	302 4P	G 4F	4F*	34	A3F	
_ V	3				G 4F	4F*	55		
_ <u>V</u>	3	1162.398	303	302_4P				A3F	
<u>y</u>		1163.446	303	302 49		4F*	44	A3F	
	3	1164.634	303	302 4P		4F*	33	A3F	
<u>_v</u>	3	1165.481	3C3	3D2 4P	G 4F	4F*	22	A3F	
<u>_v</u>	3	1167.558		3D2 4P	G 4F	4F*	43	A3F	
_ <u>v</u>	3	1168.072	303	3D2 4P	G 4F	4F*	32	A3F	
V	3	1171.832	303	3D2 4P	G 4F	4G*	56	A3F	
	3	1175.081	303	302 4P	2H	2G*	54	AlG	
	3	1175.253	303	3D2 4P	G 4F	4G*	45	A3F	
_ <u>V</u>	3		3C3	3D2 4P	4P.	45*	12	A3P	
	3	1178.644	303	302 4P	G 4F	4G*	34	A3F	
Y	3	1181.405	203		G 4F	4G*	23	" A3F	
Y	3	1268.491	303		2 G.	2G*	55	A3F	
	3_	1270.556	3C3	302 4P	2 G	2G*	44	A3F	
. V	3	1274.352	303	302 4P	2 G	2G*	54	A 3F	
y	3	1304.716	303	3D2 4P	4P	4D*	34	A3F	
<u>V</u>	3	1308.824	303	3C2 4P	2 G	2D*	43	A3F	
<u>v</u>	3	1310.438	303	3D2 4P	4 P	4D*	23	/ A3F	
V	3	1312.313	303	3D2 4P	4P	4D*	23	A3F	
· V	3	1313.252	303	3D2 4P	2 G	4D*	54	∆3F	
	3	1314.773	303	3D2 4P	4P .	40*	12	A3F	
. V	3	1316.005	303	302 4P	2G	40*	43	A3F	
V		1316.540	303	3D2 4P	4 P	4D*	22	A3F	
	3	1331.375	303	302 4P	26	2F*	54	A3F	
	3	1335.443	303	302 4P	2 G	2F*	43	A3F	
	3	1349.023	3C3	302 4P	2H	2G*	55	A3F	
y		1351.645	303	302 4P	2H	2G*	65	A3F	
	3	1355.249	303	302 4P	2H	2G*	54	Å3F	
	3	1389.502	303	302 4P	2 D		33	A3F	
	3	1411.270	303	302 4P	20	2F*	34	A3F	
•	-			JDE 11				-51	
٧	4	707.646	302	3D 4P	3 P	10*	21	20	

TABLE II. - CALCULATED LINES - Continued

	. I was to the second second	CONFIGU	RATICA	TERM		PARENT-TERP
ICN	WAVELENGTH	LOWER	UPPER		PPER JJ	LOWER UPPER
V 5	199.943	3P6 3C	3F53D 4S		2D* 22	
. V 5	200.206	3P6 3D	3F53D 4S		20* 32	
v 5	200.658	3P6 3D	3P53C 4S		20* 23	
v 5	200.885	3F6 3D	3P53C 4S		20* 33	
v 5	203.669	3P6 3D	3F53D 4S		4D* 33	
v 5	203.928	3P6 3D	3P53C 4S		4D* 34	
V 5	208.651	3F6 3D	3P53D 4S		2F* 23	3F*
V 5	208.956	3P6 3D	3P53D 4S		2F* 33	3F*
V 5	210.217	3P6 3D	3P53D 4S		2F* 34	
V 5	211.985	386 3D	3P53D 4S	G 2D	4F* 23	3F*
V 5	212.344	3P6 3D	3P53C 4S	G 2D	2P* 21	3P*
V 5	212.428	1 3P6 3D	3P53D 4S	G 2D	4F* . 34	· 3F*
V 5	212.942	3F6 3D	3P530 4S	G 2D	2P* 22	3P*
V 5	213.481	3P6 3D	3P53D 4S		4P* 32	3₽*
V 5	224.309	3P6 3D	3P53C2		20* 23	•
V 5	224.457	3P6 3D	3 P 5 3 C 2		20* 32	•
V 5	283.977	3P6 3D	3P6 4F		2F* 23	
V 5	284.372	3P6 3D.	3P6 4F	G 2D	2F* 34	15 15
V 5	481.193	3P6 3D	3P6 4P	G 2D	2P* 22	15 15
V 5	482.655	3P6 3D	3P6 4P		2P* 32	15 15
V 5	484.096	3P6 3D	3P6 4P		2P* 21	15 <u>1</u> 5
V 5	506.981	3P6 4P	3P6 6S		25 21	15 15
V 5	820.588	3P6 4P	3P6 5S	2P*	2S 11	15 15
	828,608	3F6 4P	3P6 5S	2P*	25 21	15 15
	The second secon		V			
.V 6.	137.861	3P6	3P5 4D	15	12*J 01	2P*1
.,V , 6	139,235	3P6	3P5 4D	15	23*J 01	2P*2
V 6	224.001	3P6	3P5 3D		1P* 01	2P*
. <u>.</u> V6	224.767	3P6	3P5 3D	G 1S	1P* 01	2P*
u	122 250		304 40			
V 7	123.358	3P5	3P4 4D		2P 11	10
V /	164.563	3\$23P5	3523P4 45	G 2P*	4P 12	3Р
V 8	101.678	3F4	3P3 5S	G 3P	3S* 21	45*_
v 8	102.320	3P4	3P3 5S		3S* 11	45*
V 8	102.477	3P4	3P3 5S		35* 01	45*
V 8	113.302	3F4	3P3 4D	1D	1F* 23	20*
V 8	113.623	3P4	3P3 4D		1D* 22	2D*
v 8	114.573	3P4	3P3 4D		3D* 23	45*
V 8	115.416	3P4	3P3 4D	G 3P	3D* 12	45*
V 8	115.570	3F4	3P3 4D	G 3P	3D* 01	4S*
V 8	224.534	3P4	3P3 3D		1D* 12	2P*
V8	227.684	3P4	3P3 3D	G 3P	3D* 21	2P*
V 8	229.595	3P4	3P3 3D		1P* 01	2P*
V 8	237.589	3P4	3P3 3D	G 3P	1P* 21	20*
. V . 8	240.365	3P4	3P3 3D		3P* 21	2P*
V 8	242.055	3P4	3P3 3D	G 3P	3S* 21	20*
V 8	243.976	3P4	3P3 3D	G 3P	3P* 11	2P*
V 8	244.109	3P4	3P3 3D	1 D	3D* 22	2P*
V8	244.810	364	3P3 3D		3P* 01	2P*
<u>v</u> 8	245.584	3P4	3P3 3D		35* 11	2D*
.V. 8.	246.571	3P4	3P3 3D		3S* C1	20*
V 8	253.721	3F4	3P3 3D		1P* 21	2D*
V 8	256.638	3F4	3P3 3D	<u>1</u> D	3P* 21	2P*
. V ., ,8 , ,	268.977	3 <u>P4</u>	3P3 3D	10	1F* 23	20*

TABLE II. - CALCULATED LINES - Continued

		CONFIGU	RA-TION	TE	RM		PARENT-	TERM
ICN	WAVELENGTH	LCHER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
V 8	277.270	3P4	3P3 3D	15	1P*	01		20*
V 8	299.890	3P4	3P3 3D	10	10*	22		20+
V 8		3\$23P4	35 3P5	G 3P				20+
	456.296				3P*	10		
, V , 8	472.919	3S23P4	3S 3P5	G 3P	3P*	12		···
v 9	129.688	3 S 2 3 P 3	3 \$ 2 3 P 2 4 S	2D*	2 P	32		3 P
v 9	130.324	3S23P3	3523P2 45	2D*	2P	21		3P
V 9	130.762	3\$23P3		2P*	2D	12		
V 9	131.193	3\$23P3	3\$23P2 4S 3\$23P2 4S		20 20	14		10 10
V 9				2P*	2P	23 12		
	133.618	3523P3	3523P2 45	2P*		<u>1</u> <u>2</u>		3P
	134.002	3S23F3	3S23P2 4S	2P*	2P	22		3 P
V 9	134.580	3\$23F3	3 \$2 3 P2 4 S	2 2 *	2P	11		3P
V 9	134.968	3S23P3	3S23P2 4S	2P*	2P	21_		3 P
V 9	245.059	3 S 2 3 F 3	3S23P2 3D	G 45*	4P	2.2		3P
V 9	247.654	3\$23P3	3S23P2 3D	G 4S*	4 P	23		3P
V 9	271.198	3S23P3	3S23P2 3D	20*	2P	21		3P
V 9	275.510	3 S2 3 P 3	3 S 2 3 P 2 3 D	20*	2 P.	22		3 P
V 9	276.612	3S23F3	3S23P2 3D	2D*	2 P	32		3 P
V 9	452.527	3S23P3	3S 3P4	G 4S*	4P	21		
V 9	457.657	3S23P3	3S 3P4	G 4S*	4 P	. 22		
V 10	115.157	3 S 2 3 P 2	3 S 2 3 P 4 S	G 3P	3P*	12		2P*
V 10	115.651	3S23P2	3S23P 4S	G 3P	3P#	01		2P*
V 10	115.852	3523F2	3.523P 4S	G 3P	3P*	22		2P*
V 10	116.200	2S22P2	3523P 45	G 3P	3P*	11		2P*
v 10	116.367	3 S 2 3 P 2	3S23P 4S	G 3P	3P*	îĉ		2P*
v 10	116.898	3S23P2	3523P 45	G 3P	3P*	21		2F*
v 10	256.226	3S23P2	3523P 3D	G 3P	3₽*	oi		2P#
V 10	257.203	3\$23P2	3 S 2 3 P 3 D	G 3P	3P*	10		2P*
V 10	258.564	3S23P2	3S23P 3D	G 3P	3P*	11		2P*
V 10	262.191	3523F2 3523F2	3 \$ 2 3 P 3 D	G 3P	3P*	21		20*
v 10		3S23P2			3P*	12		2F*
	262.642		3S23P 3D		_			
	266.387	3S23P2	3S23P 3D	G 3P	3P*	22		2P*
V 10	297.036	3523F2	3S 3P3	G 3P	1P*	11		
V 10	301.693	3S23P2	3S 3P3	G 3P	1P*	21		
V 10	3€€.476	3 S2 3 P 2	3 S 3 P 3	G 3P	35*	11		
V 10	309.467	3523F2	3S 3P3	G 3P	35*	C 1		
V 10	313.639	3 \$2 3 P 2	35 3P3	G 3P	35*	21		
V 10	323,902	3S23P2	3 S 3 P 3	1 D	1P*	21		
V 10	400.563	3 S 2 3 P 2	3S 3P3	G 3P	3P*	1		
V 10	409.363	3 S 2 3 F 2	35 3P3	G 3P	3P*	2		
							•	
V 11	£6.817	352 3P	352 4D	G 2P*	2 D	12	1.5	15
V 11	87.506	3\$2 3P	352 4D	G 2P*	2D	23	15	15
V 11	164.769	35 3P2	35 3P 45	49	4P*	23		3P#
V 11	105.033	35_3P2	35 3P 4S	49	4P#	12		3P*
V 11	105.340	35 3F2	35 3P 45	4P	4P*	33		3P#
V 11	105.873	3\$ 3P2	35 3P 45	4P	4P*	21		3P*
V 11	106.003	3S 3P2	3S 3P 4S	4P	4P#	32	•	3P*
v 11	106.720	3S2 3P	352 45	G 2P*	25	11	18	15
V 11	107.823	352 3P	352 45	G 2P*	25	21	15	15
v 11		3\$2 3P	352 45 352 3D	G 2P*	2D .	12	15	15
	265.767		3S2 3D	G 2P*				15
V 11	272.084	3S2 3P		G 2P*	2D	23	15	
<u> </u>	272.655	3\$2 3P	3S2 3D		2D	22	15	15
V 11	326.365	352 3P	35 3P2	G 2P*	2 P	11	15	
V 11	331.105	3\$2 3P	35 3P2	G 2P*	2P	22	15	•

TABLE II. - CALCULATED LINES - Continued

		CONFIG	TE	PARENT-TERM				
TON	WAVELENGTH	LOWER	UPPER		UPPER	JJ.	LOWER	UPPER
ION			3 S 3 P 2	G 2P*	29	21	15	CFFER .
_ <u>v_11</u> _	336.848		3P3	4P	45*	32	13	
<u> </u>	357.190	3S 3F2					• •	-
<u></u>	358.163		35 3P2	G 2P*	25	21	15	
<u>v 11</u>	449.144	3S2 3P	35 3P2	G 2.P*	2 D	23	15	
V_12	76.904	3S 3D	3S 5F	3 D	3F*	34		٠.
<u></u>		3S 3C	3S 4F	30	3F*	23		
V 12	106.679				•			
V_12	106.802		35 4F	3D	3F*	12		
<u> V 12</u>	106.916	3S 3C	3S 4F	3D	3F*	34		44 .
V 12	264.592	3S 3P	3S 3D	3P*	3D	01	25	25
V 12	266.127	3S 3P	3S 3D	3 P*	3 D	12	25	25
<u> V 12</u>	270.451	3S 3P	3S 3D	3P*	3 D	23	25	25
V 12	271.475	3S 3P	3S 3D	3P*	30	22	25	25
V 12	282.792	3S 3P	35 30	3₽*	30	12		
V 12		3S 3P	35 3D	3₽#	3 D	11		
V 12	288,239	2S 3P	3 S 3D	3P*	30	23		•
V 12	356.301	3Š2	3S 3P	G 1S	1P*	01	•	25
	527.864	352	35 3P		3P*	01		25
						, –		23
V 13	118.041	30	4P	20	2P*	32		
V 13	118-465	31)	4P	2D	2P*	21		
V 13	313.402	3 F	3 D	2P*	2 D	12		
V 13	313.736	3P	3D	2P*	20	12		
V 13	323.543	3P	30	2P*	20	23		
¥ 13	422.526		3P	G 2S	2P*	12		
V 13	443.211	35	3 P	G 2S	2P*	11		•
				0 20				
V 14	18.758	2522P6	2S 2P6 3P	G 1S	1P*	C 1		25
V 14		2522P6	2S 2P6 3P	G 15	3P*	01		25
			2S22P5 3D	G 1S	12*K	01		2P*
V 14	20.717	2S22F6			21*K	01		204
<u>V 14</u>	21.285	2522P6	2522P5 3D	G 1S	21 TN	O1		277
V 15	22.192	2P5	2P4 3S	G 2P*	4P	. 23		30
CR 5	447.065	302	3D 4P	10	16*	23		20
CR 5	467.448	3D2	3D 4P	3P	3F*	23		2D ·
CR 6	208.870	3P6 3D	3P6 4F	G 2D	2F*	23	15	15
CR 6	209.211	3P6 3D	3P6 4F	G 2D	2F*	34	15	15
CR 6			3P6 6S	2P*	25	21	15	15
CR 6	6C3.154	3P6 4P	3P6 5S	2P*	2 S	11	15	15
CR 6	609.486		3P6 5\$	2P*	25	21	15	15
, - .	, service to the service							
CR 8	eg.369	3P.5	3P4 5S	G 2P*	20	23		10
CR 8	102.234	3P5	3P4 4D	G 2P*	2D	22	·,	·10
CR 8	102.447	3P5			20	23		10
			3P4 4D	G. 2.P*		~~ & 2		
CR 8	102.964	385	3P4 4D	G 2P*	2P	22		10
CR B	103.303	3F5	3P4 4D	G 2P*	2D	12		10
CR 8	103.481	. 325	3P4 4D	G 2P*	_2\$ a.	21		10 ~
CR_8_	103.694	3P5	3P4 4D	G 2P*	2P	11_		10
CR 8	104.003	3F5	3P4 4D	G 2P*	2 P	12		10
CR 8	104.550	3P5	3P4 4D	G 2P*	25	11		10
CR 8	105.133	3P5	3P4 4D	G 2P*	25	23		39
CR 8	105.381	3P5	3P4 4D	G 2P*	4F	23		3 P
CR 8	105.537	3P5	3P4 4D	G 2P*	2 D	22		3P
CR 8	105.643	3P5	3P4 4D	G 2P*	20	23		30
CR 8	106.678	3P5	3P4 4D	G 2P*	20	12		3 P
J., J	. 2000.0		1	a a 🕶 🗢 ta ta da		<u></u>		<u></u>

TABLE II.- CALCULATED LINES - Continued

		CONF	IGURATION		TERM			PARENT-TERM		
1 G N	MAVELENGTH	LOWER	UPPER		LOWER	UPPER	JJ	LOWER	UPPER	
CR 9	96.171	3P4	393	4D	10	1F*	23	PER LIBERT STATE OF THE PROPERTY AND ADDRESS.	20*	
CR 9	96.437	364	3P3	4D	1 D	10*	22		20*	
CR 9	97.091	3P4	393	4D	G 3P	3D*	23	- "	45*	
CR 9	97.910	394	`3P3	4D	G 3P	30*	12		45*	
CR 9	57.941	3P4	393	4D	G 3P	3D*	01		45*	
CR 9	363.718	3523F4	3S 3P5		1D	1P*	21			
CR 9	467.974	3523P4	38 395		G 3P	3P*	21	,		
CR 9	418.492	3S23P4	35 395		G 3P	3P*	22			
CR 9	421.188	3523F4	3S 3P5		G 3P	3P*	11			
CR 9	424.383	3523P4	3 S 3P5		G 3P	3P*	01			
CR10	106.503	2\$23F3	3S23P2	45	G 4S*	4P	23		39	
CR10	107.166	3S23P3		45	G 45*	4P	22		3 F	
CR10	107.514	3 S23P3	3523P2	45	2D*	20	22		10	
CR10	107.703	3S23P3	3S23P2	45	G 45*	4 P	21		3 P	
CR10	107.808	3S23F3	3S23P2	45	2D*	2 D	33		<u>10</u>	
CR11	231.020	3523P2	3S23P	3 D	G 3P	3D*	01	*** - ***		
CRII	232.244	3523F2		3D	G 3P	3D*	12			
CR11	234.263	3S23P2	3 S 2 3 P	3D	G 3P	30*	11			
CR11	235.734	3523P2		3D	G 3P	3D*	22			
CR12	293.904	3S23P	3S 3P2	*	G 2P*	2P	12			
CR12	255.807	3 S 2 3 P	3S 3P2		G 2P*	2 P	11			
CR12	318.236	3S23F	35 322		G 2P*	25	11			
CR12	332.352	3523P	35 3P2		G 2P*	25	21			
CR13	70.999	35 3	3P 3S	4D	3P*	ЗD	11	2\$	25	
CR13	51.808		D 3S	4F	3 D	3F*	34	28	25	
CR16	17.628	2 P 5	294	3D	G 2P*	25	11		10	

TABLE II. - CALCULATED LINES - Continued

		CENFIGURATION		TE	ERM		PARENT-TERM		
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER	
MN 6		3C2	3D 4P	G 3F	3D*	32	CONER	20	
MN 6	315.651	302	3D 4P	10	1F*	23		2 D	
MN 6		3C 4P	3C 4D	3F*	3G	23	20	2D	
			3D 4D	3F*	3G	34	20	2D	
MN 6			12 1111 1 1251						
MN 6	925.704	2C 4P	3D 4D	3F*	. 3 G	45	20	20	
MN 6	933.524	3C 4P	3C 4D	3F*	3G	44	2 D	2D	
_MN 9	106.659	3P5	3P4 4S	G 2P*	28	11		15	
MN10	334.682	3523P4	3S 3P5	10	19*	21		-	
MN10	372.711	3\$23P4	3S 3P5	G 3P	3P*	21			
MN10		3S23P4	3S 3P5	G 3P	3P*	22			
MNIO	386.634		3S 3P5	G 3P	3P*	11	•		
MN10			3S 3P5	G 3P	3 P*	01			
				. 0.5.	<i>-</i>	-			
MN11	91.628	3S23P3	3523P2 4S	G 45*	4P	23		3P	
MN11	52.237	3S23P3	3 S 2 3 P 2 4 S	G 4S*	4P	22		3 P	
MN11		3S23F3	3S23P2 4S	2D*	20	22		10	
MN11	52.681	3 S 2 3 P 3	3523P2 45	2D*	2 D	33		1 D	
MN11	92.733	3S23P3	3\$23P2 4\$	G 45*	4 P	21		3 P	
MN11		3523P3	3523P2 3D	G 4S*	4P	21		3P	
	· · · · · · · · · · · · · · · · · · ·			0 .0	• • •			٥,	
MN12	214.235	3S23P2	3S23P 3D	G 3'P	30*	01			
MNIZ	215.246	3S23P2	3523P 3D	G 3P	30*	12			
MN12	218,028	3523P2	3S23P 3D	G 3P	30*	11			
MN12		3S23P2	3 S 2 3 P 3 D	G 3P	3D*	22			
	210.020	225765	33234 30	, G 5F	30+	4.2			
MN13	294.544	3S23P	3S 3P2	G 2P*	25	11			
MN13	309.329	2 S 2 3 P	3S 3P2	G 2P*	25	21			
MN13	330.926	3 S 2 3 P	3S 3P2	G 2P*		22			
MN13		3 S 2 3 P	35 3P2 35 3P2	G 2P*	2D			•	
MNIS	447.530	2323r	35 372	G 2P#	2 D	23			
MN14	47.020	3S 3P	3 S 50	3P*	3 D	12	25	25	
MN14	47.297	2S 3P	3S 50	3P#	30	23	25	25	
	62.513	3\$ 3P	3S 4D		3D	01	25	25	
MN14		3S 3P	3S 4S	3P*	3S	01	25	25	
MN14			3S 4F	3D	3F*	34	23 25	25	
					_			23	
MN14	328.300	3S 3P	3P2	3P*	3P	22	25		
MN15	44.816	30	50	2P*	20	12			
MN15	45.152	3P	50	2P*	2D	23			
American profession (second)				- :					
MN17	15.947	2P5	2P4 3D	G 2P*	2 S	11		10	
MN17	16.020	2P5	2P4 30	G 2P*	20	12		30	
			_, . 50	J 2, .				J .	
MN24	1.722	152	1S 3P	G 1S	3P*	01			
MN24		152	1S 2P	G 15	3P*	61			
	<u> </u>	132	13 44	G 12	254	O I			

TABLE II. - CALCULATED LINES - Continued

		CONFI	GURAT	-			TE	RM		PARENT-TERM		
ICN	WAVELENGTH	LOWER		UPPER	₹ .	t	OWER	UPPER	JJ	LOWER	UPPER	
FE 5	352.586	3D4		303	4P		3 H	3G*	65		A2F	
FE 5	352.764	304	·	3D3	4P		3H	3G*	54	•	A2F	
FE 5	352.938	3C4		303	4P		3H	3G*	43		A2F	
FE 5	378.015	3C4		3D3	4P		3F	3G*	23		A2F	
, , ,	, 51,000	. 22.1			1.7.		- ,		*		C.M.J	
FE 7	233.110	302		30	4P	Ċ	3F	3D*	33		20	
	233.747	302		3D	4P		3F	3D*	43		2D	
FE, 7						G			23			
FE 7	243.278	3C2		3D	4P	-	3P.	3F*			2D	
FE 7	244.515	302		3D	4P		3P	3D*	23		2 <u>D</u>	
FE 7	245.086	302		3D	4P		3 P	3D*	01		<u> 20</u>	
FE 7	245.278	302		3D	4P		3 P	3D*	11		20	
FE 7	776.654	3C 4F		3C	4D		3F*	3G	23	2 D	20	
FE 7	782.046	3C 4P		3 D	4D		3F*	3G	34	2D	20	
FE 7	786.303	3D 4P	,	3 D	4D		3F*	3G	45	20_	20	
FE 7	754.414	3D 4F		30	4D		3F*	3.G	44	2D	2D	
FE10	77.001	3P5		3P4	4D	G	2P*	2 P	12		10	
FE10	90.418	3P5		3P4			2 P*	25	21		15	
FE10	91.701	3P5		3P4			2P*	25	11		15	
							2			•		
FE11	192.576	3P4		3P3	3 D	Ģ	3 P	3P*	11		2 P*	
1,511	192.00	. ar.a	* * * * * * * * * * * * * * * * * * * *		. پر		. 2.5	<u>J</u> T				
FE12	364.447	3 \$2 3 P 3	3.9	3P4		G	4 S*	4P	23			
						_						
FE14	269.034	3\$23P	3 9	3P2		G	2 P*	2 D	22			
1	•,•,•,•						.=		······································			
FE15	41.88C	35 36	•	3S	5D		3 P*	3 D	23	25	25	
FE15	66.234	35 31		35	45		3P*	3\$	21	25	25	
FE15	292.231	35 3F		3P2			3P*	3 P	12	25	-	
	307.814	3S 3F		3P2		**	3P*	3P	11	25		
FE15	301.014	23 25		37 2			377	38	* *	23		
£510	14.446	2P5		2P4	3 D		2P*	2 D			3 P	
FE18									12			
FE18	14.461	2P5		2P4			2P*	2P	2.2		3P	
FE18	14,535	2P5		2P4	,3D		2 P*	2 P	21		3 P	
FE18	14.820	2P5		2P4			2P*	2P	11		3P	
FE18	16.009	2 P 5		2P4	35	G	2P*	, 4P	22		3P	
CC 6	247.515	304		303	4P		3F	3G*	23		A2F	
CO 6	255.806	304		303			3H	3G*	65		A2F	
	255.936	304		3D3			3H-	3G*	54	•	A2F	
CO 6				303			3H		43		A2F	
CC 6	256.085	364						3G*				
CO 6	265.481	304		3D3			5D	5P*	23	•	44P	
CO 6	265.839	304		303			5 D	5P*	33		A4P	
CO 6	265.976	304		3D3			5 D	5P*	12		A4P	
6 90	266.250	304		3D 3		G	5 D	5P*	22		A4P	
CO 6	266.316	304		303		G	5 D	5P*	43		A4P	
CO 6	266.469	304		3D 3			5D	5P*	11		A4P	
CC 6	266.629	304		303	4P	G	5D	5P*	32		A4P	
CO 6	266.739	304		3D3	4P	G	50	5P*	21		A4P	
CO 6	270.950	304		303			3H	3G*	43		A2H	
CO 6	271.353	304		3D3			3H	3G*	54		A2H	
CC 6	271.522	3C4		303			3H	3G*	55		AZH	
CD 6	271.798	304		303			3H	3G*	65		A2H	
CO 6	275.121	304		3D 3			3G	3G*	33		A2H	
CC 6		304		303			3G	3G*	44		A2H	
UU 6	275.558	31. ♥		203	7.		J ()	70*	4 🕶		P £ 11	

TABLE II. - CALCULATED LINES - Continued

		CENETG	JRATION	TE	RM		PARENT:	_TED#
ICN	HAVELENGTH	LOWER	UPPER	LOWER	UPPER	IJ	LOWER	UPPER
CO 6	275.696	304	303 4P	3G	3G*	45	COMPL	A2H
CQ 6	275.980	304	3D3 4P	3G	3G*	55		A2H
CO 6	276.387	304	3C3 4P	G 5D	3D*	23		£4F
6 00	276.883	304	3D3 4P	G 5D	3D*	12		A4F
CQ 6	277.467	304	303 4P	G 50	5F*	34		A4F
CO 6	277.475	304	303 4P	G 5D	5F*	45		A4F
CO 6	278.053	304	303 4P	G 5D	5F*	33		A4F
CO 6	278.482	304	303 4P	G 50	5F*	11		A4F
CO 6	278.565	304	3D3 4P	G 5D	5F*	43		A4F
CO 6	278.67C	304	3D3 4P	G 5D	5F*	32		A4F
CO 6	278.764	304	3D3 4P	G 5D	5D*	34		A4F
CC 6	278.765	304	3C3 4P	G 5D	50*	23		A4F
CO 6	278.758	304	303 4P	G 50	5F*	21		A4F
,CQ 6	279.269	304	303 4P	G 5D	50*	44		A4F
CO 6	279.465	304	3D3 4P	6 5 D	50*	33		A4F
CO 6	279.605	304	3D3 4P	G 5D	5D*	C1		A4F
CO 6	279.990	304	3D3 4P	G 5D	5C*	43		A4F
6 DO	280.048	304	3D3 4P	G 5D	50*	32		A4F
6 00	282.292	304	3D3 4P	3H	3G*	65		A 2 G
CQ 6	262.587	304	303 4P	3н	3G*	54		A2G
CC 6	283.068	304	3D3 4P	3H	3G*	43		AZG
CO 6	283.541	304	303 4P	3F	3G*	45		A2G
CO 6	284.034	304	303 4P	3F	3G*	34	•	A2G
CO6	284.797	304	303 4P	3F	3G*	23		AZG
CO_6	286.809	304	303 4P	3G	3G*	55		A2G
CQ_6	287.161	304	3D3 4P	3G	3G*	44	*	AZG
CO 6	287.647	304	3D3 4P	3G	3G*	33		A2G
CO 6	288.052	304	303 4P	3G	3G*	43		A2G
CO 6	294.378	304	3D3 4P	3F	3F*	34		#26 #4F
CO 6	294.520	304	303 4P	3F	3F*	44		A4F
CO 6	295.326	304	3C3 4P	3F	3F*	43		A4F
CQ 6	255.810	204	303 4P	3F	3F*	22	*	A4F
CO 6	255.880	304	3D3 4P	3F	3F*	32		A4F
CD 6	296.005	304	3D3 4P	3н	3G*	65		A4F
CQ 6	296.072	304	3D3 4P	3н	3G*	44	•	A4F
CQ 6	296.444	3C4	3D3 4P	3Н	3G*	54		A4F
CQ 6	296.719	304	3D3 4P	3H	3G*	43		A4F
CO 6	257.367	304	3D3 4P	3F	3G*	45		A4F
CO 6	297.723	304	3D3 4P	3G	3F*	44		A4F
CO 6	298.024	304	303 4P	3F	3G*	34		A4F
_CO 6	298.052	304	3D3 4P	3 G	3F*	54		A4F
_ CO 6	298.529	304	3D3 4P	3G	3F*	43		A4F
_ CO 6	298.600	304	303 4P	3 F	3G*	23		A4F
_CO 6	298.871	304	3D3 4P	3G	3F*	32		A4F
CO 6	299.559	304	3D3 4P	3P	3D*	01		A4F
CO 6	300.207	304	3D3 4P	3 P	3D*	12		A4F
CO 6	300.687	304	3D3 4P	3P	30*	11		A4F
CO 6	30C.974	304	303 4P	3 G	3G*	55		∆4F
CQ 6	301.116	304	3D3 4P	3P	30*	23		A4F
CO 6	301.304	304	3D3 4P	3F	3D*	33		A4F
CO 6	301.435	304	3D 3 4P	3F	30*	43		A4F
CO 6	301.474	3[4	3D3 4P	3 G	3G*	44		A4F
<u>CO</u> 6	302.042	304	3D3 4P	3 P	3D*	22	-	A4F
CO 6	302.134	3D4	303 4P	3F	3D*	22		A4F
CO 6	302.199	304	3D3 4P	3F	3D*	32		A4F
CO 6	302.413	304	3D3 4P	3P	5D*	01	* * •	A4F
				Tt		×*		ETT

TABLE II. - CALCULATED LINES - Continued

		CONSTCIU	0.477.01	**	24		BADENT	7504
T.C.N.	VANCELCHICTA	CONFIGU		_	RM		PARENT	
ICN	WAVELENGTH	LCher	UPPER	LOWER	UPPER	11	LOWER	UPPER
<u>CO 6</u>	302.652	304	303 4P	3F	3D*	21		A4F
<u>CO 6</u>	303.122	304	3D3 4P	3P.	5D*	12		A4F
<u>CO 6</u>	303.492	304	303 4P	3F	5F*	32	•	A4F
<u>CO 6</u>	304.258	304	303 4P	3P	50*	23		A4F
<u>CO 6</u>	304.539	<u> 304</u>	303 4P	3F	50*	43		A4F
<u>CO 6</u>	3C 5 • 1 01	304	303 4P	3F	5D*	32		A4F
<u>CO 6</u>	305.526	304	303 4P	3F	5D*	21		A4F
<u>CO 6</u>	318.423	304	3D3 4P	3F	3F*	23		A4F
CO 6	318.486	304	3D3 4P	3F	3F*	33		£4F
<u>CO 6</u>	327.394	304	303 4P	3F	5F*	43		A4F
CC 7	211.732	303	302 4P	G 4F	4D#	44		A3P
CO 7	212.219	303	302 4P	G 4F	4D*	54		A3P
CO 7	212.519	3C3	3D2 4P	G 4F	4D*	22		A3P
CO 7	212.685	303	302 4P	G 4F	4D#	43		A3P
CO 7	212.832	303	302 4P	G 4F	40*	32		A3P
_CO 7	216.213	303	302 4P	2 G	2H*	56		A1G
CO 7	219.190	303	3D2 4P	4 P	4P*	23		#3P
CO 7	219.638	303	3D2 4P	4P	4P*	33		A3P
_CO_7	219.734	3C3	3D2 4P	G 4F	20*	33		A3F
	219.920	303		4P	40*	22		#3P
CO 7								
_CO_7	220.176	303	3D2 4P	G 4F	20*	43		A3F
CO 7	220.389	303	3D2 4P	4 P	4P*	32		A3P
CO_7	220.399	303	3D2 4P	2H	2H*	66		A1G
_CO_7_	220.971	303	302 4P	G 4F	4D*	54		A3F
<u>CO 7</u>	221.218	303	3D2 4P	G 4F	4D*	43		A3F
<u>CC 7</u>	221.334	303	302 4P	4 P	4D*	34		A3P
CC 7	221.497	3D3	3D2 4P	G 4F	4D*	32		£3F
CO 7	221.923	3 C 3	3D2 4P	49	4D*	23		A 3P
CO 7	222.150	3D3	3D2 4P	G 4F	4F*	45		A3F
CO 7	222.183	303	3C2 4P	G 4F	2F*	54		A3F
_CQ_7	222-255	303	3C2 4P	G 4F	2F*	43		A3F
, CO 7	222.322	303	3D2 4P	G 4F	4G*	56		A3F
, ÇO, 7	222.404	303	.302 4P	4P	40*	12		A3P
CO 7	222.422	3C3	302 4P	G 4F	4F*	34		A3F
CO. 7	222.688	.303	3C2 4P	G 4F	4F*	55		A3F
	222.863	303	3D2 4P	G 4F	4F*	44		A3F
CO 7	223.005	303	302 4P	G 4F	4G*	45		A3F
CO 7	223.113	3D3	3D2 4P	G 4F	4F*	33		A3F
CC 7	223.314	303	302 4P	G 4F	4F*	22		A3F
CO 7	223.521	3C3	302 4P	G 4F	4G*	34		A3F
CO. 7	223.574	3Ç3	3D2 4P	G 4F	4F*	43		A3F
CO 7_	223.672	3C3	302 4P	G 4F	4F*	32		A3F
CO. 7	224.005	303	302 4P	G 4F	4G*	23		A3F
CO 7		303	302 4P	4P	45*	12		A3P
CO 7	225.176	303	3D2 4P	2H	2G*	54		A1G
CO 7	229.254	3C3	3D2 4P	2G	2G*	55		A3F
			302 4P	2G	2G*	44		#3F
CC 7	229.516	303		2G	2G*	54		A3F
CO 7	230.008	3C3	302 4P	4 D	40+	27		
	230.898	303	302 4P	4P	4D*	34		A3F
CO 7	231.190	303	3D2 4P	. 2G	20*	43		A3F
CO _7	231.272	303	302 4P	4P	<u>40*</u>	23		A3F ~
CO 7	231.758	303	3D2 4P	4P	40*	33		A3F
CC 7	231.929	3C3	3D2 4P	4P	4D*	12		A3F
Lu, i	231.983	303	302 4P	2G	4D*	54		A3F
CO 7	232.072	3C3	3D2 4P	4P	4D*	22		A3F
CO 7	232.333	3C3	302 4P	2G	4D*	43	·· -·	A3F
CO 7	233.298	303	302 4P	2G	2F*	54		A3F

TABLE II. - CALCULATED LINES - Continued

	•	CONETC	URATION		RM		DADENT_TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER		PARENT-TERM LOWER UPPER
CC 7	233.484	3£3	3D2 4P	2G	2F*	<u> </u>	A3F
CO 7	233.644	3C3	302 4P	2H	2G*	55	A3F
CO 7	233.968	3 <u>C 3</u>	3D2 4P	2H	2G*	65	A3F
CO 7	234.415	303	302 4P	2H	2G*	54	A3F
CO 7	236.101	3C3	3D2 4P				
				2D	2D*	33	A3F
CD 7_	237.757	303	3D2 4P	<u>2</u> D	2F*	34	A3F
CO 8	181.137	302	3D 4P	G 3F	3F*	34	20
CO 8	181.688	302	3D 4P	G 3F	3F*	44	20
CO 8	182.168	302	3D 4P	G 3F	3F*	33	20
CC 8	182.289	302	3C 4P	G 3F	3F*	22	20
CO 8	182.734	302	3D 4P	G 3F	3F*	43	20
CO 8	182.773	302	30 4P	G 3F	3F*	32	20
CC 8	183.202	302	3D 4P	G 3F	30*	33	20
CO 8	183,558	302	3D 4P	G_3F	30*	22	2D
CO 8	183.670	302	30 4P	G 3F	30*	43	2D
CC 8	183.947	3C2	3D 4P	G 3F	3D*	32	20
CO 8	184.179	302	3D 4P	1 D	1P*	21	20
CC 8	185.888	302	3D 4P	3P	1P*	21	
CO 8	187.113	302	3D 4P	3P	3P*	12	20
CD 8	187.257	302	3D 4P	3P			2D
	187.429	3C2	30 4P		3P*	01	20
		302	30 4P	3P	3P*	11	20
CO 8	167.436 187.530		and the second of the second o	3P	3P*	10	20
	187.852	302		3P 3P	3P*	22	20
CC 8		302 302	3D 4P		3P*	21	20
CO 8	190.071		3D 4P	1 G	1F*	43	20
CD 8	190.969	302	3D 4P	3P	3D*	23	20
CO 8	151.105	302	3D 4P	,1D	1D*	22	20
CO 8	191.441	302	3D 4P	3P.	3D*	C1	20
CO 8	191.510	302	3D 4P	3 P	3D*	11	20
CC 8	191.511	302	30 4P	3P	3D*	12	20
CC 8	191.950	302	30 4P	3P	3D*	22	. 20
CC 9	95.890	3P6 3D	3P53D 4S	G 2D	20*	23	3D*
CO 9	56.026	3P6 3D	3P53C 4S	G 2D	2D*	22	30*
CC 9	96.117	3P6 3D	3P53D 4S	G 2D	2D*	33	3D*
CC 9	96.246	3P6 3D	3F53D 4S	G 2D	20*	32	3D*
CO 9	97.507	3P6 3D	3P53D 4S	G 2D	4D*	33	30*
CO 9	97.763	3P6 3D	3F53D 4S	G 2D	4D*	34	3D*
CO 9	98.922	3P6 3D	3P53D 4S	G 2D	2F*	23	3F#
CC 9	99.173	3P6 3D	3P53D 4S	G 2D	2F*	33	3F*
CO 9	99.789	3P6 3D	3F53C 4S	G 2D	2F*	34	3F*
CO 9	100.085	3P6 3D	3P53D 4S	G 2D	4F*	23	3F*
CO 9	100.531	3F6 3D	3F53D 4S	G 2D	4F*	34	3F*
CD 9		3P6 3D					7 <u>2</u> 21.
CC 9	100.595 101.093	3P6 3D	3P53D 4S 3F53C 4S	G 2D G 2D	2P* 2P*	22	3P* 3P*
CO 9	101.045	396 3D	3F53D 4S		2₽ + 4₽ +	21 32	3P*
CC 9	155.144	396 3D	3P53D2	G 2D G 2D			3r 4
CC 9	155.325	386 3D			2D*	23	10
CO 9	155.669	3P6 3D	3 P 5 3 D 2 3 P 5 3 D 2	G 2D G 2D	2D*	22	15
CO 9	156.067				2D*	32	10
CC 9		3F6 3D	3F53C2	G 2D	20*	33	15
CC 9	156.659	3P6 3D	3P6 4P	G 2D	2P*	22	•
	157.292	3F6 3D	3P6 4P	G 2D	2P*	32	
_CO 9	157.779	3P6 3D	3P6 4P	G 2D	2P*	21	
CC 9		3P6 3D	3 P 5 3 C 2	G 2D	2F*	34	15
<u>CO 9</u>	17C.839	3F6 3D	3F53D2	G 2D	2F*	23	15

TABLE II.- CALCULATED LINES - Continued

		CONETC	URATION	TC	RM		PARENT	_160#
IGN	WAVELENGTH	LCHER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
	71.395	3P6	3P5 4D	15	12*J	01	COMEN	2P*1
C010		396	3P5 4D	15	23*J	01		2P+2
C010	72.372	3P6	3P5 3D	15	1P#	01		2P+
_ CO10	158.903		טפ כאכ	13	177	01		277
CC1 1	54 320	3P5	3P4 5S	G 2P*	2 D	23		10
CC11	54.229		3P4 4D	. –		22		10
C011_	66.026	3P5		G 2P*	2D		•	
C011	66.310	3P5	3P4 4D	G 2P*	2D .	23	•	10 10
C011_	66.605	3P5 3P5	3P4_4D 3P4_4D	G 2P*	2P 2D	12		
	66.841	3P5	3P4 4D	G 2P*	2S	21		10: 10
CC11	66.991	3P5	3P4 4D	G 2P+		11		10
	67.849	3P5		G 2P*	2S 2F	23		3P
<u>CC11</u>	67.950 67.956	205	3P4 4D 3P4 4D	G 2P*	4F	23	•	3 P
CCII		3P5						3 P
C011	67.989 67.999	3P5	3P4 4D	G 2P* G 2P*	2D 2D	22 23		3P
C011		3P5 3P5	3P4 4D	G 2P*	2D	12		3P
C011	68.767	373						15
C011	78.550	3P5	3P4 4S	G 2P*	2S	21		1D
<u>C011</u>	<u>81.467</u>	3P5	3P4 4S	G 2P*	20	23		
C011	82.516	3P5	3P4 4S	G 2P* G 2P*	. 2P	21		3 P
<u>CC11</u>	82.729	3F5	3P4 4S		2D	12		10
C011_	£3.193	3P5	3P4 4S	G 2P*	2P	22		3P
C011	83.854	3P5	3P4 4S	G 2P*	2P	11		
CC11	84.040	3F5	3P4 4S	G 2P*	4P	22		3P
<u>C011</u>	84.541	3P5	3P4 4S	G 2P*	2P	12		3 P
C011	£4.662	3P5	3P4 4S	G 2P*	4 P	23		3P
C011	158.510	3P5	3P4 3D	G 2P*	2D	22		10
C011	162.798	3 P 5	3P4 3D	G 2P*	20	23		10
C011	163.164	3P5	3P4 3D	G 2P*	2 P	21		10
<u>CC11</u>	163.491	3P5	3P4 3D	G 2P*	,2D	12		10
C011	165.058	3P5	394 3D	G 2P*	2 P	22		10
C011	168,479	2P5	3P4 3D	G 2P*	2P	11		10
CC11	17C-440	3P5	3P4 3D	G 2P*	2P	12		10
CO11	171.848	<u>3F5</u>	3P4 3D	G 2P*	2.5	21		1D
CO11	177.721	3P5	3P4 3D	G 2P*	25	11		10
C011	317.385	3\$23P5	3S 3P6	G 2P*	25	21		
C011	338.102	3S23P5	3S 3P6	G 2P*	25	11		
C012	75.506	, 3P4	3P3 4S	1 D	1P*	21		2P*
C012	75.605	3P4	3P3 4S	G 3P	3D*	23		2D*
C012	75.931	3P4	3P3 4S	G 3P	3D*	22		20*
CC12	76.864	364	3P3 4S	G 3P	30*	12		20*
C012	76.884	3P4	3P3 4S	G 3P	* 3D*	11		20*
CC12	77.003	3P4	3P3 4S	G 3P	3D*	C 1		20*
CC12	77.701	3P4	3P3 4S	G 3P	35*	21		45*
CC12	77.744	3P4	3P3 4S	1 D	1 D*	22		20*
<u>CC12</u>	78.085	3P4	3P3 4S	1 S	1P*	01		2P*
C012	78.669	3P4	3P3 4S	G 3P	35*	11		45*
<u>CC12</u>	78.759	3P4 _.	3P3 4S	G 3P	35*	C 1		4 5 *
CC12	167.926	3P4	3P3 3D	G 10	1F*	23		2P#
CC12	168.472	. 3P4	3P3 3D	G 3P	3D*	23		2P*
C012	169.130	384	3P3 3D	G 3P	3D*	01		2P*
C012	170.418	3P4	3P3 3D	G 3P	3D*	12		2 P*
CO12	172.519	3P4	3P3 3D	1 D	10*	22		2P*
CO12	175.766	3P4	393 30	G 3P	3P*	22		2P*
CO13	174.878	3P3	3P2 3D	20*	2F	34		10
C013	339.537	3523F3	3S 3P4	G 45*	4P	23		

TABLE II. - CALCULATED LINES - Continued

		CONFIGU	RATION	TE	RM		PARENT	-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
Ç014	184.854	2P2	3P 3D	1 D	1F*	23		
CC14	190.839	3P2	3P 3D	G 3P	3D*	23		
. 0027	*,0.03,	3, 2	3. 32	0 3.	30			
CC15	157.550	3 P	3C	G 2P*	20	12		•
0015	205.806	3 F	3 C	G 2P*	20	23		
CC15	236.299	3S23P	3 S 3 P 2	G 2P*	2 P	12		
CC15	240.192	3S23F	35 3P2	G 2P*	2 P	ii		
CO15	248.491	3523F	25 3P2	G 2P*	2.P	22		
CC15	253.493	3523P	3S 3P2	G 2P*	2 P	21		
0023	433.473	30211	50 5. 2	. .	L . /			
CC16	44.268	3S 3D	3S 5F	3 D	3F#	34		
CC16	47.508	352	3S 4P	G 1S	1P*	01		25
C016	49.854	3S 3P	3S 4D	3P*	30	C1	25	2\$
CC16	49.993	3S 3P	3S 4D	3P*	30	12	25	25
C016	50.010	35 3P	3S 4D	3P*	30	11	2S	25
		3S 3P	3S 40	3P*	30	23	2S	2S
C016	50.391				3D			
CC16	50.426		35 40 35 45	3P* 3P*	3S	22 01	25	25
C016	58.091	3S 3P	an early of the Terror of the transfer		<i>3</i> S	11	25	2\$
CO16	58.334	3S 3P	35 45	3P*			25	<u>2S</u>
C016	58.951	3S 3P	35 45	3P*	3S	21	2.5	
CO16	61.887	3\$ 3C	3S 4F	3D	3F*	1.2		
CO16	61.912	35 30	35, 4F	3D	3F*	23		
C C 1.6	£2.000	35 30	3S 4F	3D	3F*	34		·
C016	212.763	3 S 3 P	3 \$ 3D	3P*	3D	12		
CC16	213.325	35 3P	3 S 3D	3P*	3D	11		
CO16	219.913	3S 3P	3\$ 3D	3P*	30	23		
CO16	265.807	352	35 3P	G 15	1P*	01		
CG16	271.118	35 3P	3P2	3P*	3P	12	25	
C016	286.368	3S 3P	3P2	3 P*	3 P	22	25	
CC16	287.851	3 S 3 P	3P2	3P*	3P	11	25	
CO16		35 3P	3P2	3 P*	3 P	10	25	
C016	302.764	3S 3P	3P2	3P*	3P	21	25	
C017	15.546	2P6_3S	2P53S2	G 2S	2P*	11		
CC17	15.820	2P6 3S		G 2S	2P*	12		
	41.542	2PO 33	2F3332	2D	2F*	23		
CC17	45.322		4P	G 2S	2P*	12		
	45.515	3S 3S	4P	G 2S	2P*	11	·	
CO17	47.717					12		
CC17	235.110	3P	30_ 3C	2P* 2P*	20 20	23	, .	-
CC17	247.684	3 F	JL 30					
C017	249.920	3P	3D	2P*	2D_	22		
CC17	212.576	3S 3S	3P 3P	G 25	2P*	12		
C017	339.469	35	3P	G 2S	2P*	11		
CC18	12.593	2 S22P6	2S 2P6 3P	G 15	19*	01		25
CO18	12.650	2S22P6	2S 2P6 3P	G 1S	3P*	01		25
रहराच्चित्रः.		-		. A 		·		
CO19	12.834	2P5	2P4 3D	G 2P*	2 D	23		15
		285	2P4 30	G 2P*	2D	12		15

TABLE II. - CALCULATED LINES - Concluded

		CONFIC	GURATION		RM	• • • • •	PARENT-TERM
ICN	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	ู่ไไ	LOWER UPPER
CO19	12.925	2P5	2P4 3D	G 2P*	2 P	22	10
CG19	12.970	2P5	2P4 3D	G 2P*	2P	21	10
CO19	13.063	2P5	2P4 3D	G 2P*	. 2C	23	3P
CO19	13.096	2P5	2P4 3D	G 2P*	2 P	22	3 P
CO19	13.194	295	2P4: 3D	G 2P*	2D	23	10
CO19	13.209	2P5	2P4 3D	G 2P*	2 P	21	3 P
CO19	13.292	2P5	2P.4 3D	G 2P*	4D	22	3P
CC19	13.374	2 P 5	2P4 3D	G 2P*	2 P	12	3P
CC19	13.490	. 2P5	2P4 3D	G 2P*	2P	11	3 P
CC19	14.173	2F5	2P4 3S	G 2P*	2 D	23	10
CC19	14.343	2P5	2P4 3S	G 2P*	2 D	12	10
CC19	14.425	2 P 5	2P4 3S	G 2P*	2P	22	3P
CO19	14.550	2P5 ·	2P4 3S	G 2P*	4 P	2.2	3 <u>P</u>
CC19	14.627	2F5	2P4 3S	G 2P*	4P	23	3P
CO19	14.677	25 2P6	25 2P5 3S	25	29*	12	
CC19	81.740	2S22P5	2S ZPE	G 2P*	2\$	21	
CC19	87.242	2S22F5	2S 2P6	G 2P*	25	11	
		1.00			20.4		
CC 26	1.474	152	15 3P	G 15	3P*	C1	•
C026	1.728	152	1S 2P	G 15	3P*	01	***

(a) Lines Calculated From Four Known Wavelengths

TABLE III.- FINDING LIST

	<u></u>	CONFIGU	RATION		TE	RM	·	PARENT	-TERM
ION	WAVEL ENGTH	LOWER	UPPER		LOWER	UPPER	ĴĴ	LOWER	UPPER
MN24	1.722	182	1S 3	P	G 1S	3P*	01	-	
MN24	2.007	182	15 2	P	G 15	3P*	01		
CL16	3.779	152	15 3	Ρ (G 1S	3P*	01		
CL16	4.447	152			G 15	3P*	01		
F 9	11.473	18		Р	G 2\$	2P*	12		
C019	12.834	· 2P5	2P4 3		G 2P*	2D	23		15
CO19	12.884	2P5	2P4 3	,	G 2P*	2D	12		15
	12.925	2P5	2P4 3	n.	G 2P*	2P	22		1D
CO19			2P4 3	D	G 2P*	2P	21		1D
C019	12.970	2P5 2P5	2P4 3	<u> </u>	G 2P*	2D	23		3P
C019	13.063						23		10
C019	13.194	2P5	2P4 3	ישי	G 2P*	2D			
CO19	13.292	2P5	2P4 3	Ü	G 2P*	4D	22		3P.
CO19	13.374	2P5	2P4 3		G 2P*	2P	12		3P
CO19	14.173	2P5	2P4 3		G 2P*	2D	23		1D
C019	14.343	2P5	2P4 3		G 2P*	2D	12		10
C019	14.425	2P5	2P4 3		G 2P*	2P	22		3P
FE18	14.461	2P5	2P4 3		G 2P*	2P	22		3P
FE18	14-535	2P5	2P4 3	D	G 2P*	2P	21		3P
CC19	14.677	2S 2P6	2S 2P5 3	S	25	2P*	12		
FE18	14.820	2P5	2P4 3	D	G 2P*	2P	11		3P
FE18	16.009	2P5	2P4 3	S	G 2P*	4P	22		3P
MN17	16.020	2P5		The same of the section of	G 2P*	20	12		3P
V 15	22.192	2P5	2P4 3		G 2P*	4P	23		3P
SC13	24.241	2P5	2P4 3		G 2P*	2 D	12		15
SC13	24.623	2P5			G 2P*	2P	21		10
SC13	25.282	2P5	2P4 3	in	G 2P*	2P	12		3P
S 13	35.681	2S 2P		D	1ρ*	10	12	*	
ALII	36.694	25 25			G 2S	2P*	12		-
				D	G 3P	3D*	12		
P 10	36.767	2P2			G 3P				
P 10	36.793	2P2		D D	2P*	3D*	23		
P 13	37.562	2P				20	12		
P 13	37.704	2P		D	2P*	2D	23		
CL 8	38.117	2P6			G 15	12*K	01		2P*
CL 8	38.300	2P6	2P5 6		G 1S	22*K	01		2P*
P 12	38.632	2S 2P		P	1 P*	1 D	12		2P#
ALIO	39.904	2\$2			G IS	1P*	01		
P 12	40.292	2P2	2P 3	D	3P	3P*	22		2P*
P 12	40.377	2P2	2P 3	D	3 P	3D*	12		2P*
P 12	40.416	2P2		D	3P	3D*	23		2P*
P 12	40.600	2P2		D	1 D	1F*	23		2P*
P 9	41.074	2P3			G 45*	4P	23		3P
P 9	42.319	2P3		D	2D*	2F	34		3P
				D	4P	4P*	33		3p*
P 11	42.349	2S 2P2	23 ZF 3			-	23		31.4
AL10	42.413	2S 2P		D	3P*	3D			20+
P 11	42.413	2S 2P2		D	4P	4D*	12		3b*
P 9	42.945	2P3	2P2 4		2P*	2D	23		3P
P 10	43.051	2S22P2	2S 2P2 3		10	10*	22		20
P 10	43 • 245	2S22P2	2S 2P2 3		1 D	1F*	23		20
P 11	43.815	2S 2P2		D.	2P	2D*	12		1P*
P 9	43.830	2P3	2P2 4		2D *	2P .	32		3P
_ P 11	43 • 888	2S 2P2		D	2 P	20*	23		1P*
P 12	44.036	2S 2P	25 3	S	1P*	15	10	•	
P 11	44.238	2S 2P2		D	2 D	2F*	23		3P*
P 10	44.348	2S22P2	2S 2P2 3	P	G-3P	3D*	12		4P
P 10	44.371	2S22P2	2S 2P2 3	P	G 3P	3D*	23		4 P
MN15	44.816	3P		D	2P#	2D	12		
			-		_	-			

	ور معادد المعادد الم	CONFIG	JRATION	TE	RM		PARENT	-TERM
ION	WAVEL ENGTH	LOWER	UPPER	LOWER	UPP ER	JJ	LOWER	UPPER
P 11.	44.961	25 2P2	2S 2P 3S	20	2P*	32		1P*
P 11	44.988	2S 2P2	2S 2P 3D	2D	20*	33		3P*
P 11	45.011	2S 2P2	2S 2P 3D	2D	2D*	22		3P#
MN15	45.152	3P	5D	2P*	20	23		
P 10	45.287	2522P2	2S 2P2 3P	G 3P	35*	21		4P
S112	45.459 T	2P	3\$	2P*	28	11		
P 11	45.685	2S 2P2	2S 2P 3S	4P	4P *	23		3P*
P 11	45.747	2S 2P2	2S 2P 3S	4P	4P*	12		3P*
P 11	45.793	2S 2P2	2S 2P 3S	4P	4P ≉	33	-	3P*
P 11	45.882	2S 2P2	2S 2P 3S	4P	4P*	21		3P#
P 11	45.921	2S 2P2	2S 2P 3S	4P	·4P*	32		3P*
P 10	46.067	2P 2	2P 3D	G 3P	:3P*	10	•	
P 10	46.C87	2P2	2P 3D	G 3P	3P ★	11		
P 10	46.199	2P2	2P 3D	G 3P	3P*	21		
P 10	46 • 233	2P2	2P 3D	G 3P	3P*	22		
P 10	46.241	2P2	2P 3D	G 3P	3D*	C1		
P 10	46.294	2P2	2P 3D	G 3P	3D*	12		
P 10	46.330	2P2	2P 3D	G 3P	30*	23		
P 8	46.352	2P4	2P3 4D	G 3P	3D*	23		2P#
P 10	46.644	2S 2P3	2S 2P2 3D	3D*	3F	34		2D
Р 8	47.180	2P4	2P3 4D	G 3P	3P*	22		2D#
PE	47.236	2P4	2P3 4D	G 3P	3D*	23		2D*
MN14	47.297	3S 3P	3S 5D	3P*	3D	23	2.5	25
P 8	47.362	2P4	2P3 4D	G 3P	3D*	12		2D*
P 11	47.414	2S 2P2	2S 2P 3S	2P	2P*	22	e artiselt van derk Harry dan gewone in Hele	1P*
P 8	47.438	2P4	2P3 4D	10	lF*	23	property in the second continue to the second continue to the second continue to the second continue to the se	2P*
P 11	47.446	2S 2P2	2S 2P 3D	2P	20*	23	ونكاد دد درها يل الحساد سيد.	3P *
C016	47.508	3S2	3S 4P	G 15	1P*	01		2\$
P 10	47.697	2\$ 2P3	2S 2P2 3D	3P *	30	23		2D
P 11	47.796	2S 2P2	2S 2P 3S	20	2P*	32		3P*
P 10	48.116	2P2	2P 3D	15	1P*	01	يد خالد روي - چارهها دوروا در بحروري	
P 8	48.284	2P4	2P3 4D	1 D	IF*	23		2D#
P 8	48 • 480	2P4	2P3 4D	1D	1P*	21		20*
P 9	48.931	2\$22P3	2S 2P3 3P	G 45#	4P	23		55*
P 10	48 • 985	2\$ 2P3	2S 2P2 3D	3D*	3F	34		4P
P 8	48.998	2P4	2P3 4D	G 3P	3D* 3F	12		4S* 4P
P 10	49.078	2S 2P3	2S 2P2 3D	3D *	3F	23	organic substitute part and the	4P
P 10	49.147	2S 2P3	2S 2P2 3D 2P3 4S	3D ≠ G 3P	3D*	12		2D*
P 8	49.286	2P4 2S 2P3	2S 2P2 3D	G_3P#	3D*	23_		4P
P 10 CO16	49.772	3S 3P	3S 4D	3P*	3D	23 12	25	28
C016	50.391	3S 3P	3S 4D	3P*	30	23	28	2S
CO16	50.426	3S 3P	3S 4D	3P*	30	22	2S	25
P 8	50 • 482	2P4	2P3 4S	10	1D*	22		2D*
P 9	50.624	2P3	2P 2 3D	G 45*	4D	21		3P
P 10	50.664	2S 2P3	2S. 2P2 3S	5S*	5P	23		4P
P 9	50.673	2P3	2P2 3D	G 45*	4D	23		3P
P 9	50.762	2P3	2P2 3D	2D*	2P	32		1D
P 10	50.778	2S 2P3	2S 2P2 3S	5S*	5P	22		4P
P 9	50.815	2P3	2P2 3D	2D*	2P	21	ne the arthropis is applying tribling it yo	iò
P 10	50.849	2S 2P3	2S 2P2 3S	5S*	5P	21		4ρ
P 10	50 • 874	2S 2P3	2S 2P2 3D	3P*	3P	22		4P
P 10	51.006	2P2	2P 3S	G 3P	3P#	12		
P 10	51.091	2P2	2P 3S	G 3P	3P*	01		
P 10	51.096	2S 2P3	2S 2P2 3S	3D*	3D	01 33		20
	 			- - -	ساده دومیشت تنهر دورد	·	and the second of the second	

	******	man in the sime manager Contrary 97-15-17	GURATION	Albert to market a to the	TERM			-TERM
ION	WAVEL ENGTH	LOWER	UPPER	LOWER	UPPER	IJ	LOWER	UPPER
P 9	51.129	2P3	2P2 3D	2D*	2F	23	nihishii i ar aba aa iaa	10
P 9	51.133	2P3	2P 2 3D	2D*	2D	22		10
P 10	51.147	2P2	2P 3S	G 3P	3P*	22		
P 9	51.682	2P3	2P2 3D	2P*	25	21	and the same of the same of the	10 10
	51.839	2P3	2P2 3D	2P*	2P .	22		2D
P 10 P 9	52.641	2\$ 2P3 2P3	2S 2P2 3S 2P2 3D	3P* 2P*	3D 2D	23 23		3P
P 9	52 • 955 52 • 977	2P3	2P2 3D	2P*	20	12	TO COLUMN AND AND A CO.	3P
P g	52.999	2P3	2P2 3D	20*	2P	32		3P
P 10	53.841	2P2	2P 3S	18	1P*	01		
P 9	54.178	2P3	2P2 3D	2P*	2P	22		3P
AL 8	54.210	2P2	2P 4D	G 3P	3P*	22		
P 7	54.684	2P5	2P4 4D	G 2P*	2D	23		1D
p 9	55.066	2S 2P4	2S 2P3 3D	4P	4D*	34	CONTROL MAY DUSTERSON TO COME	5S*
P 9	55.300	2S 2P4	2S 2P3 3D	4P	4D*	12		55*
AL 8	55.308	2P2	2P 4D	10	1F*	23		
AL 8	55.720	2P2	2P 4D	10	10*	22		anne e de competencia
P 8	56.569	2P4	2P3 3D	G 3P	35*	21		2D*
P 8	56.743	2P4	2P3 3D	G 3P	3P*	21		2D*
8 4	56.800	2P4	2P3 3D	G 3P	3P*	22	. 272. 2. 2	20*
8 q	56.924	2P4	2P3 3D	G 3P	3P*	10	The same of the same	20*
P 8	56.987	2P4	2P3 3D	G 3P	3P*	12		20*
P 8	56.989	2P4	2P3 3D	G 3P	3P*	01		2D*
9 9	57.060	2P4	2P3 3D	G 3P	3D*	23		2D*
p g	57.193	2P4	2P3 3D	1 D	1P*	21		2P*
P 8	57.387	2P4	2P3 3D	1 D	1D*	22		2P*
CC16	58.334	3S 3P	35 45	3P*	35	11	28	2\$
p 9	58.988	2P3	2P2 3S	2D*	2P	32		3P
AL10	59.110	2P2	2P 3D	10	1D*	- 22		
P 9	59.155	2P3	2P2 3S	20*	2P	21		3P
B 4	59.522	294	2P3 3D	G 3P	3D*	12	•	45*
P 8	59.595	294	2P3 3D	G 3P	3D*	01		45*
Pς	60.439	2P3	2P2 3S	2P*	2P	22		3P
p 9	60.595	2P3	2P2 3S	2P*	2P	11		3P
9 q	60.893	2P4	2P3 3D	15	1P*	01		20*
p 9	61.701	2S 2P4	2S 2P3 3S	4 P	45*	32		55*
P 9	61.895	2S 2P4	2S 2P3 3S	4P	45*	22		55*
AL 7	63.028	2P3	2P2 4D	20*	2D	33	-	10
P 7	64.251	2P5	2P4 3D	G 2P*	20	22	•	1D
P 7	64,340	2P5	2P4 3D	G 2P*	2P	22		10
AL 7	64.789	2P3	2P2 4D	2D*	2F	23		3P
P 7	64 . 887	2P5	2P4 3D	G 2P*	2P	11		10
P 8	65.754	294	2P3 3S	10	1P*	21		2P*
AL 7	65.757	2P3	2P2 4S	2D*	2D	33		10
P 8	66.041	2P4	2P3 3S	G 3P	3D*	12		20*
P 8	66,132	2P4	2P3 3S	G 3P	3D*	01		2D*
P 7	66.167	2P5	2P4 3D	G 2P*	2P	22		3P
FE15	66.234	3S 3P	35 45	3P#	35	21	25	25
P 7	66.353	2P5	2P4 3D	G 2P*	2D	22		3P
P 7	66.744	2P5	2P4 3D	G 2P*	2P	11		3P
CR13	70.999	3S 3P	3S 4D	3P*	30	11	25	2\$
F 7	72.339	25	7P	G 2 S	2P*	12		
NE 8	73.483	2P	4D	2P*	20	12		
F 7 P 7	74.513	25	6P	G 2S	2P*	12		
	76.343	2P5	2P4 3S	G 2P*	20	12		10
P 7	77.985	2P5	2P4 3S	G 2P*	2P	21		3P

	and the second control of the second control	CONFIG	URATION			TERM	•	PARENT	-TERM
ION	WAVEL ENGTH	LOWER	UPP		LOWE		JJ	LOWER	UPPER
E 7	78.366	25	0		G 2S	2P#	12		
P 7	78.735	2P5	20	4 35	G 2P*	2P	12		`3P
the transporter total contract	78.746	2P		7D	2P*	2D	··· 23		5, -
F 7	79.109	2P5	2P		G 2P*	4P	22		3P
		** N. A. TONICO CO. A. A. A. T.			25	2P*			3P#
<u> </u>	80.829	2S 2P6	2S 2P				12		3P*
F 7	81 • 234	2P		6D	2P*	20	23	4	••
CO11	81.467	3P5		4 45	G 2P*	20	23		1D
C019	81.740	2\$22P5	2S 2P		G 2P*	25	21		
NE_7	82.182	2S 2P	28		3P*	3D	Cl		
CO11	82.516	3P5	3P		G 2P*	2P	21		3P
CO11	82.729	3P5		4 45	G 2P*	2D	12		10
MG 6	83.144	2P3	2P	2 40	2D*	20	33		3P
CC11	83, 193	3P5	3P	4 45	G 2P*	2P	22		3P
CO11	83.854	3P5	3P	4 45	G 2P*	2P	11		3P
CC11	84.040	3P5	3P	4 45	G 2P*	4P	22	••	3P
CO11	84.541	3P5		4 45	G 2P*	2P	12		3P
CO1 1	84.662	3P5	3P		G 2P*	4P	23		3P
MG 6	85.206	2P3	2 P		2P*	2D	12	-	3P
		All the second of the second o			. 7		23		,
NE 7	85.438	2P2	2P	4D.	3P	3D*			
, F 7	85.820	2P		5 D	2P*	20	23		
C019	87.242	2S22P5	2S 2P		G 2P*	28	11		
NE 8	88.120	2S		3P	G 2S	2P*	11		
CR 8	88.369	3P5	3P		G 2P*	2 D	23		10
NE 6	89.065	2S 2P2	2S 2P	50	4P	4D*	34		3P*
NE 6	89.944	2P		·5D	G 2P*	20	12		
NE 6	90.049	2P		5 D	G 2P*	. 2D	23		
FE10	90.418	3P5	3P	4 45	G 2P*	25	21		15
T111	93.377	3.S 3P	3\$	4D	3P*	3D	01	2\$	25
NE 7	94.385	2S 2P	2P	3P	3P#	3P	21		•
NA 6	94.726	2P2	2P		10	1P*	21		
NE 7	94.825	2S 2P	2P		3P*		<u>01</u>		
NE 7	94.867	2S 2P	2P	4	3P*	3\$	11		
NE 7	95.896	2S 2P	2P		3P*		11		
NE 7	95.933	2S 2P	2P		3P*	30	22		
NE 6	96.973	2S 2P2	2S 2P		4P	4P*	33		3P*
			2S 2P		4P	4D*	23		3P*
NE 6	97.087				4P				
NE 6	97.106	2S 2P2	2S 2P			4D*	34		3P*
F 7	97.357	2P		45	2P*	2S	21		
NE 6	98.105	2P		4D	G 2P*		12		
NE 6	98. 234	2P		,4D	G 2P*		23		
, K 9	98.808	35		5P	G 25	2P*	12		
K 9	98.870	3 S		. 5P	G 2S	2P#	11		
NE 6	100.607	2S 2P2	2S 2P	45	4P	4P*	33		3P*
NE 6	101.787	2S 2P2	2P	2 3P	4P	45*	22		3P
NE 6	101.855	2S 2P2	2P	2 3P	4 P	45*	32		3 <i>P</i>
NE 6	101.903	2P		45	G 2P*	2\$	21		
CR 8	102.234	3P5	3P	4 4D	G 2P*	2D	22		1D
CR 8	102.447	3P5		4 4D	G 2P*	20	23		10
CR 8	102.964	3P5		4 4D	G 2P*	2P	22 -		10
NE 7	103 • 145	2S 2P	2P		1P*	10	12		
CR 8	103 • 143	3P5		4 4D	G 2P*	20	12		10
CR 8	103 • 481	3P5		4 40	G 2P*	25	21		10
NE 6		2S 2P2	2S 2P	4D	2D	25 2F*	34		3P*
	104.130								3P*
NE 6	104.201	2S 2P2	2S 2P	4D	20	2F*	23		
CR 8	174.550	3P5	3P	4 4D	G 2P*	25	11		1D

		CONFIG		TERM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER		PPER JJ	LOWER UPPER
CR 8	105.133	3P5	3P4 4D	G 2P*	2F 23	3P
CR 8	105.381	3P5	3P4 4D		4F 23	3P
CR 8	105.537	3P5	3P4 4D	G 2P*	2D 22	3P
CR 8	105.643	3P5	3P4 4D	G 2P*	2D 23	3P
NE 7	106.039	2S 2P	2S 3D		3D 01	
CR 8	106.678	3P5	3P4 4D	G 2P*	2D 12	3P
NE 6	107.611	2S 2P2	2P2 3P		2D* 33	10
F 6	108.874	2S 2P	2S 4D		3D 12	ه دود ا هما خود همای این استخداد که در این دود این در این دود این در دود در
NE 5	110.373	2P2	2P 5D		3D* 23	and the second contract of the second contrac
NE 7	110.553	2P2	2P 3D		3D* 01	a comment of the contract of the contract of
NE 7	110.590	2P2	2P 3D	and the contract of the contra	3D* 12	in a series de la company de l
NE 7	110.704	2P2	2P 3D		3D* 22	a programma de las las las las como estados diffusiones en a partidade de las estados de las est
NA 5	111.753	2P3	2P2 4S	respondence to the first of the second	4P 23	3P
NE 5	113.709	2P2	2P 5D		1F* 23	rame or arrangement of income
		3S 3P	3S 4S		3S 01	2S 2S ~
TILL	113.946	2S 2P	2S 3S		3S 01	2323
NE 7	115.333	23 2P 2P3				10
MG 6	116.989		the case and the case of the case of the case of	market a commercial and a commercial and the commer	20 23	4P
NE 5	117.164	2S 2P3	2S 2P2 4D		5P 22	
NE 6	117.484	2S 2P2	2S 2P 3D		2D* 33	1P#
F5_	118.449	2 P	6D		2D 12	
NE 6	118.634	2S 2P2	2S 2P 3D		2F* 34	1P*
NE 5	118.887	2P2	2P 4D		30* 01	
NE 5	119.000	2P2	2P 4D		3D* 12	
SC15	119.080	2S22P3	2S 2P4	2D*	2P 21	
K 9	119.934	3P	55	2P#	25 21	
NE 6	120.187	2S 2P2	2S 2P 3D		4P* 12	3P*
NE 6	120.205	2S 2P2	25 2P 3D	4P	4P* 21	3P*
NE 7	120.222	2P2	2P 3S	3P	3P* 12	
NE 6	120.242	2S 2P2	25 2P 3D		4P* 22	3P*
NE 6	120.288	2S 2P2	2S 2P 3D		4P* 23	3P*
NE 7	120.304	2P2	2P. 3S		3P* 01	
NE 6	120.335	2S 2P2	2\$ 2P 3D	THE RESIDENCE OF STREET AND A STREET ASSESSMENT	4P* 32	3P* .
	120.335	2S 2P2	25 2P 3D		4P* 33	3P*
NE 6		29 2F2 2P2	2P 3S		3P* 10	
	120.456				4D* 12	3P*
NE 6	121.078	2S 2P2				
NE 6	121.121	2S 2P2	2S 2P 3D		4D* 23	3P*
NE 6	121.219	2S 2P2	2S 2P 3D		4D* 33	3P*
SC14	122.700	2S22P4	2S 2P5	1D	1P* 21	and the second of the second o
CALC	123.786	3P	4D	2P*	2D 22	1
K 8	123.893	3S 3P	3S 5D	3P*	3D 23	2S 2S
NA 6	124.036	2P2	2P 3S	G 3P	3P* 10	
NE 5	124.186	2P2	2P. 4S		3P* 12	
SC15	124.233	2 S 2 2 P 3	2S 2P4	2D*	2P 22	a laboration of the state of the section of the sec
NE 5	124.314	2P2	2P 4S		3P* 10	Contract of the contract of th
NE 5	124.388	2P2	2P 4S		3P* 21	Committee to the second of the second
NE 5	125.072	2 S 2 2 P 2	2S 2P2 3P		10* 22	2 D
NE 5	125.776	2S22P2	2S 2P2 3P		1F* 23	. 50
SC15	125.871		2S 2P4		2P 32	20
		2\$22P3	2P2 3D		LT 34	3P
NE 6	126.128	2P3	17 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 *		4P 21	
NE 6	126.149	2P3	2P2 3D		4P 22	3P
NE 6.		2P3	2P2 3D	45*	4P 23	3P
NE 5	127.698	292	2P 4D		1P* 01	
NE 6	128.070	2S 2P2	2S 2P 3D		2D* 12	1P*
NE 6	128.170	2S 2P2	2S 2P 3D	***	20* 23	1P*
NE 5	129.919	2S 2P3	2S 2P2 4D		3F 34	4P
NE 5	129.996	2S 2P3	2S 2P2 4D	30*	3F 23	4P

		CONFIGU	IP A T I ON	TF	RM		PARENT	-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	ĴĴ	LOWER	UPPER
NE 6	130.259	2S 2P2	2S 2P 3D	20	2F*	34	===	3P*
V 9	130.324	3S23P3	3\$23P2 4\$	2D*	2P	21		3P
NE 6	130.398	2S 2P2	2S 2P 3D	2 D	2F*	23		3P*
V 9	130.762	3S23P3	3S23P2 4S	2P*	20	12		1D
v ś	131.193	3\$23P3	3S23P2 4S	2P*	2D	23	•	1D
NE 6	131.382	2S 2P2	2S 2P 3S	20	2P*	32		1P*
MG 4	132.194	295	2P4 4S	G 2P*	20	23		10
CL 7	133.053	35	6P	2 \$	2P*	12		
NE 6	133.493	2S 2P2	2S 2P 3D	20	2D*	33		3P#
NE 6	133.526	2S 2P2	2S 2P 3D	20	20*	22		3P*
v s	133.618	3S23P3	3S23P2 4S	2P*	2P	12		3P
v 9	134.002	3\$23P3	3S23P2 4S	2P*	2P	22		3P
V 9	134.580	3\$23P3	3S23P2 4S	2P*	2 P	11		3P
V 9	134.968	3S23P3	3S23P2 4S	2P*	2P	21		3P 🐪
NE 6	136.199	2S 2P2	2S 2P 3S	4P	4P*	23		3P*
NE 6	136.268	2S 2P2	2S 2P 3S	4 P	4P ≉	12		3P*
NE 6	136.440	2S 2P2	2S 2P 3S	4P	4P*	21		3P*
NE 6	136.479	2S 2P2	2S 2P 3S	4P	4P*	32		3P*
NE 6	138.568	25 2P2	2S 2P 3D	28	2P*	11		3P*
NE 6	138.614	2S 2P2	2S 2P 3D	2 S	2P*	12		3P*
NE 7	141.260	2P2	2S 3P	1D	1P*	21		_ JF ** .
NE 5	142.347	2P2	2P 3D	G 3P	3P*	01		
NE 5	142.582	2P2	2P 3D	G 3P	3P*	12		
NE 6	142.735	2P3	2P2 3S	45*	4P	22		3P
	143.271	2P2	2P 3D	G 3P	30*	11		3F
NE 5 NE 5	143.401	2P2	2P 3D	G 3P	30*	22		
SC14	145.168	2S22P4	2S 2P5	G 3P	3P*	21		~
NE 6	147.355	2S 2P2	2S 2P 3D	ŽP	20*	12		3P*
NE 6	147.481	2S 2P2	2S 2P 3D	2P	20*	23		3P*
NE 6	147.589	2S 2P2	2S 2P 3S	20	2P*	32	-	3P*
NE 6	147.792	2S 2P2	2S 2P 3S	2D	2P*	21		3P*
SC14	148.573	2S22P4	2S 2P5	G 3P	3P#	10		3F T
SC14	150.574	2S22P4	2S 2P5	G 3P	3P#	22		
SC14	151.959	2\$22P4	2S 2P5	G 3P	3P*	11		
SC14	152.971	2S22P4	2S 2P5	G 3P	3P*	oi.		
CG 9	155.325	3P6 3D	3P53D2	G 2D	2D*	22	1.5	
CO 9	156.067	3P6 3D	3P53D2	G 2D	2D*	33	15	
SC14	157.911	2S22P4	2S 2P5	G 3P	3P*	12		
CO11	158.510	3P5	3P4 3D	G 2P*	20	22		1Ď
	159.828	2S 2P2	2S 2P 3S	25	2P*	12		3P*
NE 6	160.052	25 2P2 25 2P2	2S 2P 3S	25	2P*	11		3P*
NE 6 CL 7	162.595	23 2F2 3P	23 <u>2</u> F 33	2P*	25	21		3P*
COLI	162.798	3P5	3P4 3D	G 2P*	2D	23		1D
C011	163.164	3P5	3P4 3D	G 2P*	2P	21	r 6	10 10
				G 2P#				
CO11	163.491 164.856	3P5 2S 2P2	3P4 3D 2S 2P 3S	2P	2D 2P*	12		1D
NE 6		3P5	3P4 3D	C 20#	2P	22 22		3P*
C011	165.058			G 2P* 1S				1D
AR11	165.585	2S22P4 1S2	2S 2P5	G 1S	1P*	01		
LI 2	167 • 273	2P2	1S 6P 2P 3S		1P*	01		
NE 5	167.892	3P5	3P4 3D	G 3P G 2P *	3P*	11	•	16
CC11	168.479		2S 2P2 3D	3P*	3P	11		10
NE 5	168.721	2S 2P3				22		4P
LI 2	168•773 169•336	152	1S 5P	G 15	1P*	01	1	
CO 9		3P6 3D	3P53D2 2S 2P4	G 2D G 4S*	2F*	34	1 \$	
SC15	170.090	2\$22P3	43 EP#	U +3*	. 7 1	21		-

		CONFIG	JRATION	TE	R'M		PARENT-TERM		
ION	WAVEL ENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER		
CO1 1	170.440	3P5	3P4 3D	G 2P*	2P	12	10		
CO 9	170.839	3P6 3D	3P53D2	G 2D	2F*	23	18		
CO11	171.848	3P5	3P4 3D	G 2P*	2\$	21	10		
NE 4	172.862	2P3	2P2 3D	G 45*	4D	23	3P		
SC15	173.413	2 S22P3	2S 2P4	G 4S*	4P	22			
NE 5	175.775	2S 2P3	2S 2P2 3S	3P*	3D	23	2D -		
NE 4	176.045	2P3	2P2 3D	2D*	2D	22	10		
CO11	177.721	3P5	3P4 3D	G 2P*	25	11	10		
CO 8	181.137	3D2	3D 4P	G 3F	3F*	34	20		
SC15	181.271	2S22P3	2S 2P4	G 4S*	4P	23	•		
CO 8	181.688	3 D 2	3D 4P	G 3F	3F*	44	20		
8 OO	182.168	3D2	30 4P	G 3F	3F*	33	20		
CG 8	182.289	3D2	3D 4P	G 3F	3F*	22	20		
CO 8	182.734	302	30 4P	G 3F	3F*	43	20		
CO 8	182.773	302	3D 4P	G 3F	3F*	32	20		
CO 8	183.558	3D2	3D 4P	G 3F	3D*	22	20.		
NE 5	183.740	2S 2P3	2S 2P2 3S	3D*	3P	32	4P		
NE 5	184.112	2S 2P3	2S 2P2 3S	30*	3P	10	4P		
CO 8	184.179	302	3D 4P	1 D	1P*	21	2D		
NE 4	185.758	2P3	2P2 3D	20*	2F	23	3P		
8 00	187.113	3D2	3D 4P	3P	3P*	12	2D		
CO 8	187.257	3D2	3D 4P	3P	3P*	01	20		
CO 8	187.429	3D2	3D 4P	3P	3P*	11	2 D		
CO 8	187.436	302	3D 4P	3P	3P*	10	20		
CO 8	187.530	302	30 4P	3P	3P*	22	20		
CO 8	187.852	302	3D 4P	3P	3P*	21	20		
CC 8	190.071	302	3D 4P	1 G	1F*	43	20		
NE 5	191.029	2S 2P3	2S 2P2 3S	1D*	10	22	20		
8 00	191.105	302	3D 4P	10	10*	22	20		
S D0	191.511	302	3D 4P	3P	3D*	12	20		
CC 8	191.950	302	3D 4P	3P	3D*	22	20		
AR 7	192.065	3S 3P	3S 4D	3P*	3D	11			
AR 7	192.664	3S 3P	3S 4D	3P*	3 D	22			
NA 3	193.919	2 P 5	2P4 4D	G 2P*	2D	22	3P		
P 9	196.890	2S22P3	2S 2P4	2D#	2P	22			
LI 2	202.235	152	1S 2P	G 1S	3P*	01			
NA 3	296.882	2P5	2P4, 4S	G 2P*	2P	21	3P		
NA 3	207.303	2P5	2P4 4S	G 2P*	2P	22	3P		
NA 3	207.468	2P5	2P4 4S	G 2P*	2P	11	3P		
P 10	207.733	2S22P2	2S 2P3	G 3P	35*	21			
NE 5	210.198	2S 2P3	2S22P 3P	3D*	3P	32			
P 9	211.335	2S22P3	2S 2P4	2P*	2P	11			
P 9	211.628	2S22P3	2S 2P4	2P*	ZP	21			
F 4	214.103	292 2P2	2P 3D	1D	1D*	22	المداد فالطاره (برياده دارا) الها داران (المستحد و المداد المادي و والفعالا لم		
			2S 2P4	2P*	2P	22	and a second control of the second of the se		
	214.476	2S22P3			2F	23	3P		
NA 3 NE 3	214.730 218.275	2P5 2P4	2P4 30 2P3 3D	G 2P*	3P*	22	2P*		
					3D*	23	45*		
NE 3	223.085	2P4	2P3 4D 2P3 4D	G 3P	3D*	12	45*		
NE 3	223.392	2P4 3P6	3P5 3D	6 15	1P*	01	2P*		
V 6	224.767		2P3 3D	G 1S G 3P	35*	VI	20#		
	227 307	2P4	2P3 30	G 3P	3p.+	21 22	20*		
NE 3	227.493	2P4		C 20	3D*	21	20 +		
V 8	227.684	3P4	3P3 3D	G 3P G 3P	30∓ 3P≠		20*		
NE 3	227 800	2P4	2P3 3D		3P*	12	20*		
NE 3	227 • 890	2P4	2P3 3D	G 3P		01			
NE 3	228 • 892	<u>2</u> P4	2P3 3D	G 3P	3D*	23	20*		

*** *** * *		CON	FIG	JRATION "		TERM				PARENT-TERM		
ION	WAVEL ENGTH	LOWER		UPPER		L	OWER	UPPER	ĴĴ	LOWER	UPPER	
NE 3	229.177	2P4		2P3		G	3P	30*	12		2D*	
NE 3	230.113	2P4		2P3	45		10	1D*	22		2D*	
K 8	230.664	35	3D	3\$	4F		3D	3F*	12			
K 8	230.703	35	3D	3\$	4F		3D	3F*	23			
K 8	230.755	3\$	3D	35	4F		3D	3F*	34			
K 8	230.757	3\$	3D	3\$	4F	N. 198 (1. 1.	3D	3F*	34	25	25	
FE 7	233.110	3D2		3D	4P	G	3 F	3D*	33		2D	
FE 7	233.747	302		3D	4P	G	3F	3D*	43		20	
P 10	235 • 293	2 S 2 2 P 2		2S 2P3			1 D	10*	22			
NE 3	238.031	2P4		2P3	45	G	3P	3S*	21		45*	
NE 3	238.373	2P4		2P3			3P	35*	11		45*	
V 8	240.365	3P4		3P3	3D	G	3P	3P*	21		2P*	
NE 3	240.803	2P4		2P3	3D		10	1F*	23		2D*	
NE 3	241.517	2P4		2P3	3D		10	1D*	22		20*	
NE 3	241.931	2P4		2P3	3D		1.D	1P*	21		2D*	
V 8	242.055	3P4		3P3	3D	G	3P	35*	21		20*	
F 3	244.064	2P3		2P2	4D.		2D*	2D	22		3P	
V 8	244.109	3P4		3P3	3 D		1D	3D*	22		2P*	
FE 7	244.515	3D2		3D	4P		3P	3D*	23		2D	
V 8	244.810	3P4		3P3	3D		3P	3P*	01		2P*	
FE 7		3D2			4P	G	3P	3D*			2P +	
FE 7	245.086 245.278	3D2		3D	4P			3D*	01 11		2D	
				3D			3P				20*	
V . 8	245.584	3P4		3P3	30	<u> </u>	3P	35*	11		20+	
SI 7	246.066	2S22P4		2\$ 2P5			15	1P*	01			
V 8	246.571	3P4		3P3	30	G	3P	3S*	01		20*	
CO17	247.684	3P		3D			2P*	2D	23			
CO15	248.491	3S23P		3S 3P2		G	2P#	2P	22		· · · · · · · · · · · · · · · · · · ·	
CO17	249.920	3P		3D	. 25a 4a +a		2P*	2D	22	and the second second second		
P 9	250.395	2S22P3		2S 2P4			2D*	2D	22			
S 6	251.201		3P	36 355	55		2P*	25	11			
CO15	253. 493	3S23P		3S 3P2		6	2P*	2P	21		Be the grant are the second	
V 8	253.721	3P4		3P3	30		10	1P*	21		2D*	
TI 4	256.374	3P6_	3D	3P53D2		<u>.</u>	2D	20*	22	15		
TI 4	256.946	3P6	30	3P53D2			2D	2D*	. 33	1.5		
V 10	257.203	3\$23P2	****	3\$23P	3D		3P	3P*	10		2P*	
V 10	258.564	3S23P2		3\$23P	3D	G	3P	3P*	11		2P*	
V 10	262.191	3\$23P2		3\$23P	30	Ģ	3 P	3P*	21		2P*	
V 10	262.642	3\$23P2		3\$23P	3D	. G	3P	3P*	12		2P*	
CO16	265.807	3,52		3\$ 3P		G	15	1P*	01			
K 6	266.207	3 S 2 3 P 2		3\$23P	45		1D	1P*	21		2P*	
V 10	266.387	3\$23P2		3\$23P	3D		3 P	3P*	22		2P#	
P 10	269.718	2 S 2 2 P 2		2S 2P3		G	3P	3P*	22			
NA 3	273.069	2P5		2P4	35	G	2P*	4P	23		3P	
NA 3	273.426	2 P 5		2P4	3\$	G	2P*	4P	12		3P	
V 8	277 • 270	3P4		3P3	3D		15	1P*	01		. 20≉	
PS	278 • 447	2 S 2 2 P 3		2S 2P4			2P*	2D	12			
P 9	279.249	2S22P3		2S 2P4			2P*	2D	23			
AR 6	283.594	3S 3P2		3\$ 3P	45		4P	4P*	32		3P*	
TI 4	284.538	3P6		3P53D2			2D	2F*	34	1,5		
TI 4	284.973		30	3P53D2			2 D	2F*	23	15		
CL 5	285.280	352	3P	3\$2			2P*	20	12	•		
CL 5	286.608	3\$2	3P	3\$2	4D	G	2P*	2 D	23			
FE15	292.231	35	3P	3P2			3P*	3P	12	2\$		
CR12	293.904	3\$23P		3S 3P2		G	2P*	2P	12			
C016	298.426	3 S	3P	3P2			3P#	3P	10	25		

		CONFIGU		ŢĒ			PARENT	
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	11	LOWER	UPPER
CR12	299.807	3S23P	3S 3P2	G 2P≠	2P	. 11	-	
V 8	299.890	3P4	3P3 3D	1D	1D#	22		20*
C016	302.764	3S 3P	3P2	3P*	3P	. 21	2.5	
FE15	307.814	3S 3P	3P2	3P*	3P	11	2S	:
V 10	308.476	3S23P2	_3S_3P3	G .3P	3 <u>S</u> *	11		
_P 5	310.494	3P	5D	2P*	2D	12	-	
MN 6	311.262	30 <u>2</u>	3D 4P	G 3F	3D.*	32		2 D
P 5	311.297	3P	5D	2P*	2D	23		
V 10	313.639	3S23P2	3S_3P3	G 3P	35*	21		
V 13	313.736	3P	3D	2P*	2D	. 12	*	224
SC 9	317.841	3S 3P2	3 S 3 P 3 D	4P	4D*	12		3P*
SC 9	318.612	3S 3P2	3S 3P 3D	4P	4D*	11		3P*
SC 9	319.515	3S 3P2	3S 3P 3D	4P	4D*	. 23		_3P*
. S 5	319.831	3S 3P	3S 4D	3P*	3D	12		464
SC 9.	319.988	3S 3P2	3S 3P 3D	4P 3P*	4D*	22		3P*
S 5	320.582	3S 3P	3S 4D	3P# 4P	3D	23		3P*
SC 9	320.765	3S 3P2	3S 3P 3D	and the second of the second o	4D*	21		3P*
MG 4	320 - 893	2S22P5	2S 2P6	G 2P*	2S	21		
AL 9	321.177	2S 2P2	2P3	4P 4P	45* 4D*	32		3P*
SC 9	322.639	3S 3P2	3S 3P 3D	4P	4D*	34	-	3P*
SC 9	322.711	3S 3P2	3S 3P 3D	- 4P	4D≠	33		3P*
SC 9	323.194	3S 3P2	3S 3P 3D	G 2P*		32		324
MG 4	323.252	2S22P5	2S 2P6	2P*	25	11		
V 13	323.543	3P	2S 2P3	G 3P	2D 3P*	23		
AL 8	323.873	2S22P2				01		-
V 10	323.902	3S23P2	3S 3P3	10	1P*	21.		
AL 8	325,599	2S22P2	2S 2P3	G 3P	3P*	12	2.0	
MN14	328 • 300	3S 3P	3P2	3P*	3P	22	2 S	20
CA 6	333.512	3S23P3	3S23P2 3D	G 45*	,4P	21		3P
CA 6	334.938	3 S2 3 P 3	3S23P2 3D	G 45*	4P	22		3P
CA 6	335.233	3S23P3	3\$23P2 3D 3\$ 3D	G 45* 3P*	4P	23		3P
SC10	338.340	3S 3P	3S 3D 3D	2P*	3D 2D	11		
TI12	350.126	3P	30	2P*	2D	23		44 14
TI12	351.226	3P	3S 3P4	G 45*	4P	22 23		
FE12	364 • 447	3S23P3		1D	1P*			
NE 3	376 648	2S22P4 2S2 2P	2S 2P5 2S 2P2	G 2P#	25	21 11	- •	
NA 7	378.737	. ,,,					-	
AL 8	381.480	2\$22P2	2S 2P3	G 3P	3D*	01		
B 4	385.110	1S 2P	1S 3D	3P*	3D	23		
SC 9	386.195	3S2 3P	3S 3P2	G 2P*	2P	12		
.AL .8	387.927	2S22P2	2S 2P3	G 3P	30*	22		
K 6	389.472	3S23P2	3\$23P 3D	G 3P	30*	12		2P*
K . 6.	389,516	3\$23P2	3S23P 3D	G_3P	3D*	11		2P*
SC 9	392.867	3S23P	3S 3P2	G 2P*	2P	22		
_AL10	395.766	2S 2P	2P2	3P*	3P	12		
SC 9	399.755	3\$23P	3S 3P2	G 2P*	2P	21		
V 10	400.563	3S23P2	3S 3P3	G 3P	3P*	1		
K 7	402.922	3S 3P2	3\$ 3P 3D	4P	4P*	12		3P*
AR 4	406.031	3S23P3	3S23P2 4S	2D*	2D	. 22		1D
K 7	406 • 105	3S 3P2	3S 3P 3D	4P	4P*	23		3P*
AR 4	406.271	3\$23P3	3S23P2 4S	20*	2 D	33	*	10
K 7	407.564	3S 3P2	3 S 3 P 3 D	4P	4P*	32		3P*
K 7	408.950	3S 3P2	3S 3P 3D	4P	4P *	33		3P*
NA 6	416.231	2\$22P2	2S 2P3	G 3P	3P*	10		
0 2	418.695	2P3	2P2 4S	G 45*	4P	21		3P
F 4	419.551	2S22P2	2\$ 2P3	G 3P	3\$*	01		

		CON	FIGL	JRATION	ION TER		TERM		PARENT-TERM		
ION	WAVEL ENGTH	LOWER		UPPE	R		OWER	UPPER	IJ	LOWER	
scin	422.234	3\$2		3S 3P		G		1P#	01		J
AR 4	426.153	3S23P3		3S23P2	45		2D*	2P	21		3P
AR 4	430.048	3\$23P3		3\$23P2			20+ 2P*	2D	12		10
							_	_			
AR 4	430 • 393	3S23P3		3\$23P2	45		2P*	20	23		1D
SC10	449.283	35	3P	3P 2			3P*	3P	12	2\$	
AR 4	450 • 198	3\$23P3		3\$23P2			2P*	2P	12		3P
AR 4	450 • 525	3S23P3		3S23P2			2P*	2P	22		3P
AR 4	452 • 646	3S23P3		3S23P2	45		2P*	2P	11		3P
AR 4	452.971	3S23P3		3S23P2	45		2P*	2P	21		3P
K 6	453.427	3S23P2		3S 3P3		G	3P	1P*	01		
V 8	456.296	3S23P4		3S 3P5		G	3 P	3P*	10		
SC10	458.116	3\$	3 P	3P2			3P*	3P	22.	2 \$	
SC10	459.387	3\$	3P	3P2			3P*	3P	11	25	
SCIC	464.977	3\$	3 P	3P2			3P*	3P	10	25	
SCIO	468.673	3\$	3P	3P2			3P*	3P	21	25	
C 2	468.755	2P3	٠.	2P2	45		2D*	2P	21	23	3P
					43						. Jr
v 8	472.919	3523P4	20	3S 3P5			3P	3P*	12		
V 5	481.193	3P6	3D	3P6	41	G	2D	2P*	22	15	15
`v ~ 5	482.655	3P6	3D	3P6	4P	G	2D	2P*	32	18	15
. V 5	484.096	3P6	- 44166	3P6		G		2P*	21	18	15
NA 7	492.200		2P	2S 2P2	I	<u> </u>	2P*	20	22		
AR 4	493 • 201	3\$23P3	<u>-</u>	3\$23P2	30		2D*	2P	21		3P
	494.431		2P	2P2	טכ		3P*	3P	01		
		3S23P3	27		30		2D*	2P	22		3P
AR 4	495.542			3S23P2		** ****					
AR 4	495 • 832	3S23P3		3S23P2	30		2D*	2P	_ 32	and the second second second second	3P
NA 8	496 • 165		2P	2P2			3P*	3P	11		
S AN	498 • 123	25	2P	2P2		der a considera	3P*	3P	10		
NA 8	499 • 966	25	2P	2P2			3P*	3P	21		
SC11	505 • 252		35		3P	G		2P*	12		
SC 9	522.265	3S2	3P	3S 3P2		G	2P*	20	12		
SC11	522.765		35		3P	G		2P*	11		
CL 4	525.344	3\$23P2		3S23P	30		10	1F*	23		
B 2	544.667	252		25	5P		15	1P*	01		·
ALII	549.888		25		2P	G	25	2P*	12		
NE 6	553.578	2S 2P2	*	2P3			2D	2D*	22		
NE 6	553.688	2S 2P2	•	2P3			2D	2D*	33	•	
SC 8	556.110	3523P2		3S 3P3			3P	3D*	01		
K 8	557.609	35	3P	2P63P2			3P*	3P	12		C. Serretan Allerina
K 8	561.941	35	3P	2P63P2			3P*	3P	01	· 	
	562.827	3S23P2	٠	3S 3P3		G		3D*	12		
		4		3S 3P3		G		3D*	11		
SC 8	563.041	3S23P2							22		
K 8	564 . 849	35	3 P	2P63P2			3P*	3P		. Name and the same of the sam	
AL11	568.771		25		29	Ğ		2P*	11	comments of	
Ķ 8	569.694	3\$	3P	2P63P2			3₽ *	3P	10	· 	
SC 8	571 • 688	3S23P2	٠	3S 3P3		G	3P	3D*	23	******* ******************************	
K 8	572.969	3 \$	3P	2P63P2			3P*	3P	21		
SC 8	573 • 106	3S23P2		3S 3P3		G		3D*	22		
K 6	613.743	3523P2		3S 3P3		G	3P	3P*	01		
к 6	624.756	3S23P2		35 3P3		G	3 P	3P*	21		and and danks we.
K 6	624.821	3S23P2		35 3P3		G	3P	3P*	22	and the second of the second of the	
B 2	631.735	2\$	2P	2P	3P		3P*	3P	12		2P*2
B 2	631.838	25	2P	2P	3P		3₽¥	3P	12 22		2P*2
B 2	631.973	25	2P	2P	3P		3P*	3P	21		2P*2
AL10	637.607	252	: :'	25	2P		15	3P*	01		
		2S	2 D				3P#				2P*2
В 2,	645.451		2P	2P	3P		JF.₹	_3D	23		LT TE

. ***	CONFIGURATION		TERN				PARENT-TERM			
ION	WAVEL ENGTH	LOWE		UPPE	Ř		LOWER	UPPER	JJ	LOWER UPPER
B 2	652.754	2\$	2P	25	6D		3P*	3D	23	A CONTRACTOR OF THE PROPERTY O
B 2	652.770	25	2 P	2\$	6D		3P*	3D	12	
F 1	670.980	2P5		2P4		G	2P*	25	21	15
Fi	671.301	2P5		2P4			2P*	2P	22	1D
K 7	672.951	352	3P	3S 3P2	- 		2P*	2 D	22	
F 1	673.310	2P5		2P4	35		2P*.	25	11	15
F 1	674.139	2P5		2P4	3D		2P*	2D	23	10
B 2	680.245	28		28	5D	·.·_ •	3P*	3 D	23	and the second second second second
\$ 3	685.288	3 S2 3 P2		3\$23P	45	Ğ	3P	3P*	12	2P*
S 3	687.027	3S23P2		3\$23P	45	Ğ	3P	3P*	01	2P*
S 3		3\$23P2		3\$23P	45		3 P	3P*	ii	2P*
N 1	688•374 721•592	2 S2 2 P 3	** *,	.2S 2P4	. 43	. •.	20*	2P	21	and the same of th
	722.036			25 2P4			20*	2P	32	
		2S22P3			30		45*	4P	22	20
S 2	774.697	3\$23P3		3\$23P2			45*	4P	21	3P
S 2	775.651	3S23P3		3S23P2	ָטָבָ.	. •		2P		
N 1	776.549	2 S2 2P3		2S 2P4	• • • • •		2P* 2P*		. 11	No. 1, 186 - Charles Co. 96 - 1
N 1	777.233	2\$22P3		2S 2P4				2P	22	30
S 2	777.426	3\$23 <u>P3</u>		3S23P2	. بادِ_	G	45*	4P	23	
N 2	787.001	2S 2P3		2P4			3D*	3P	10	, where the second of
N 2	787.501	2S 2P3		2P4			3D*	3.P	21	
N 2	788 • 436	2S 2P3		2P4			3D*	3P	32	
N 2	788.485	2S 2P3		2P4			3D*	3P	22	·
F, 1	789.669	2P5		2P4	•	G	2P*	2P	21	3P
F 1	792.726	2P5		2P4	3D	Ģ	2P*	2P	11	3 <u>P</u>
S 2	799.801	3S23P3		3S23P2	3 D		20*	2F	34	10
B 2	806 • 859	2P2		2P	4 D		3P	30*	23	2P*2
0 3	834.220	2\$22P2		2S 2P3		G	3P	30 *	11	
NA 7	869.629	252	2 P	2S 2P2		G	2P*	4P	12	
P 5	871.683		3 P		3D		2P*	20	22	
NA 7	874 • 827	252	2 P	2S 2P2		G	2P*	4P	11	
N 1	881.754	2S22P3		2S 2P4			2P*	2\$	21	•
8 2	883.275	25	2P	2\$	3D		3P*	3D	01	
C 1	884.402	2S22P2		2S 2P3			1 D	1P*	21	
NA 7	885.299	2\$2	2 P	2S 2P2		G	2P*	4P	22	
NA 7	890.686	2 S 2	2 P	2S 2P2		G	2P*	4P	21	
N 2	911,065	2\$ 2P3		2P4			3P*	3P	21	
N 2	912.459	2S 2P3		2P4			3P*	3P	22	•
N 1	937,959	2P3		2P2	AD	*	2D*	2F	34	1 D
N 1	951.300	2P3	. V p.,.,	2P2		2 - 1	20*	2D	33	1D
N 1	979.004	2S22P3		2S 2P4	<u></u>		2D*	2D.	33	
N 2	979.782	2S 2P3		2S 2P2	35		3P*	3P	22	4P
N 2	982.860	2S 2P3		2S 2P2			3P*	3P	21	4P
B 2	987.377	25 25	2P	2S 2F 2	4D		1P*	1D	12	
B 2		2P2	<u>. </u>	2P	3D		3P	3D*	12	2P*2
N I	987,491	303		2P 2	30		2D*	2F	34	
N 1	992,373	203		202	30		2D*	2P		1D 1D
N 1	995.513	2P3		2P2 2P2	30		2D*	2P	.32	
17	996.108	293			30		20+		21	10
S 3	1017.497	3 \$2 3 P 2		3S 3P3		<u>G</u>	3P	3P*	10	•
N 1	1049.326	2P3	30	2P2			2P*	20	23	_ 1 D
<u>B</u> 2	1082.912	25	2P	2S	35		3P*	35	01	
<u>N 1</u>	1082.966	2S22P3		2S 2P4			2P*	. 2D	23	
CL 1	1087.665	3S23P5		3S23P4		6.	2P*	20	23	10
<u>N 1</u>	1095.370	2P3		2P2			2P*	25	21	10
<u>N. 1</u>	1100.069	2P3		2P2			2P#	2D	23	10
<u> </u>	1103.579	2P3		2P 2	3D		2P*	2P	22	10
C 1	1105.027	2S22P2		2S 2P3			1D	1D*	22	

(a) Concluded

	***	CONFIG	JRATION	TÉI	R M	PARENT-TERM		
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER	
C 1	1145.087	2S 2P3	2S 2P2 3D	5S*	5P	21	4P	
C 1	1145.272	2\$ 2P3	25 2P2 3D	55*	5 P	23	4P	
<u>C</u> 1	1145.771	2S 2P3	2S 2P2 3D	5S *	5P	22	' 4P	
B 2	1211.024	2P2	2P 3S	3P	3P*	12	2P*2	
B 2 B 2	1211.903	2P2	2P 3S	3P	3P*	22	2P*2	
B 2	1379.404	2P2	2P 3S	10	1P*	21	2P*2	
8 1	1425.588	2S 2P2	2\$ 2P 5D	~ 4P	4D ≠	34	3P*	
TI 3	1434.696	302	3D 4P	3 P	"3P ≠ "	11	2 D	
B 1	1465.454	2S 2P2	2S 2P 4D	4P	4P*	33	3P*	
	1468.184	2S 2P2	2S 2P 4D	4P	4D*	34	3P*	
B 1	1468.535	2S 2P2	2S 2P 4D	4P	4D*	23	3P.*	
B 1 B 1 B 1	1476.706	2S 2P2	2S 2P 4D	4P	4₽*	32	3P*	
B 1	1581 • 440	2S 2P2	2S 2P 3D	4P	4P*	12	3P *	
B 1 B 1	1581.737	2S 2P2	2S 2P 3D	4P	4P*	21	3P*	
8 1	1582.686	2S 2P2	2S 2P 3D	4P	4P#	23	3P*	
B 1	1583.226	2S 2P2	2S 2P 3D	4P	4P*	32	3P*	
B 1	1583.718	2S 2P2	2S 2P 3D	4P	4P*	33	3P*	
B 1 B 1 B 2	1605.689	2S 2P	2S 3S	1P*	15	10		
B 1	1607-406	2\$ 2P2	2S 2P 3D	4P	4D*	12	3₽*	
B 1	1608.507	2S 2P2	2S 2P 3D	4P	4D*	23	3P*	
B 1	1608.814	2S 2P2	2S 2P 3D	4P	4D*	34	3P*	
B 1	1609.525	2S 2P2	2S 2P 3D	49	4D*	33	3P*	
B 1	1609.982	2S 2P2	2S 2P 4S	4P	4P*	32	" 3P*	
8 1	1609.992	2S 2P2	2S 2P 4S	4P	4P*	33	3P*	
8 2	1618.169	2S 2P	2P 2	3P*	3P	11		
SI 1	1742.893	3\$23P2	3S23P 3D	G 3P	3D*	23	2P*	
B 1	1837.385	2P	3D	G 2P*	2D	23		

(b) Lines Calculated From Three Known Wavelengths

	. courtsu		10 17 701	T 5	D.44		DADONT TOOM
104	HAVELENCT!		URATION UPPER	TE! Lower			PARENT-TERM
ION	WAVELENGTH	LOWER					LOWER UPPER
C026	1.474	152	1S 3P 1S 2P	G 1S G 1S	3P*		The second second
C026	1.728	152	13 2P	G 2S	3P* 2P*		
K 19	2.585	15	5P	G 2S	2P*		
K 19	2.615	15	= :	G 2S			
P 15	4.154	15	6P 5P	G 25	2P*	12	
P 15	4.208	15	4P	G 2S	2P*	12	
P 15 P 15	4•307 4•544	1 S 1 S	3P	G 25	2P*		
		15	6P	G 2S	2P*		
S114 S114	4•770 4•772	15	6P	G 25			
	4.830	15	5P	G 25	2P*		Commission of the Commission o
S114 S114	4.832	15	5P	G 25			and the second s
S114 S114	4.946	15	4P	G 25	2P*	12	
	4.951	15	4P	G 25	2P*	. 1 .	
S114	5.218	13	. 3P	G 2S	2P*	12	
SI 14 SI 14	5.218	15	3P	G 25	2P*		
P 15	5.385	15	2P	G 2S	2P*		
			2P	G 2S	2P*	_	A CONTRACTOR OF COMMERCIAL SECTION
S114	6.182 6.183	1S 1S	2P	G 2S	2P*		The state of the s
S114	-		1S 4P	G 15	1P*		and a first term of the state o
NA10	8.979	152	15 4F	G 15	10+		. From the contraction of the community and secure and the
NA10	9•434 12•593	1 S 2 2 S 2 Z P 6	2S 2P6 3P	G 15	1P*	<u>.V.</u> J	2\$
·C018	12.650		25 2P6 3P	G 1S	3P*	01.	25
C018	13.096	2S22P6	25 2P6 3P 2P4 3D	G 2P*	2P		3P
CO19		2P5	2P4 3D	G 2P*			3P
C019	13.209	2P5	1S 6P	G 15	1P*		
F 8	13.336	1 S 2 2 P 5	2P4 3D	G 2P*	2 P		
CO19	13.490	2P5 2P5	2P4 3D	G 2P*	20	12	
FE18	14.446	2P5	2P4 3S	G 2P*	4P	22	
CO19	14.550 14.627	2P5	2P4 3S	G 2P*	4P	23	3P 3P
CO17	15.546	2P6 3S	2P53S2	G 2S	2P*	11	
CO17	15.820	2P6 3S	2P53S2	G 2S	2P*		A CONTRACT OF MAINTING AND
MN17	15.947	2P5 33	2P4 3D	G 2P*	25	11	10
CR16	17.628	2P5 2P5	2P4 3D	G 2P*	25		10
V 14	18.758	2 S22 P6	2S 2P6 3P	G IS	1P*		2S
V 14 V 14	18.897	2 S 2 2 P 6	2S 2P6 3P	G 15	3P*		25
V 14 V 14	20.717	2522P6	2S22P5 3D	G 15	12*K	01	2P*
T113	21.027	2S22P6	2S 2P6 3P	G 15	1P*	. 01	2\$
T113	21.065	2S22P6	2S 2P6 3P	G 15	1P*	01	
T113	21.121	2S22P6	2S 2P6 3P	G 15	3P*	01	25
T113	21.150	2 S 2 2 P 6	2S 2P6 3P	G 1S	3.P*	01	
V 14	21.285	2S22P6	2S22P5 3D	G 15	21*K	01	2P*
SC12	21.935	2S22P6	2S22P5 4D	G 15.	12*K	91	2.P*
SC12	22.107	2 S 2 2 P 6	2S22P5 4D	G 15	. 22*K	01.	2P*
K 16	22.726	2S 2P	2S 3D	3P*	. 3D	23	
K 16	22.779	2S 2P	2S 3D	3P*	3D	12	
SC12	22.875	2\$22P6	2S22P5 4S	G 1S	11*K	01	2P*
SC12	23.002	2S22P6	2S22P5 4S	G 15	22*K	91	2P*
N 6	23.024	1 \$2	1S 6P	G 1S	1 P*	01	
N 6	23.282	1 \$2	1S 5P	G 1S	1P*	01	
K 15	24.237	2S 2P2	2S 2P 30	4P	4D*	34	3₽*
AR15	25.804	2S 2P	2S 3D	3P*	3 C	12	
AR15	25.808	2S 2P	2S 3D	3P*	3 D	23	
K 10	26.514	2P6	2 P5 6D	G 1S	12*K	01	2P*
CL15	26.615	2\$	3P	G 2S	2P#	12	
K 10	26.627	2P6	2P 5 6D	G 1S	22*K	01	2.P*

		RATION	TF	PARENT-TERM			
ION	WAVELENGTH	LOWER	UPPER	LOWER	RM. UPPER	ĴĴ	LOWER UPPER
CL 15	26.762	28	3P	G 25	2P*	11	CONC O
K 10	27.480	2P6	2P5 5D	G 1S	12*K	01	2P*
AR14	27.501	2S 2P2	2S 2P 3D	4 P	4D*	34	3P*
TI12	27.616	2P6 3S	2P53S2	G 2S	2P*	11	
CL14	27.830	2S 2P	2P 3P	3P*	3 D	23	
TI12	27.922	2P6 3S	2P53S2	G 2S	2 P *	12	
CA12	28.018	2P 5	2P4 3D	G 2P*	2₽	22	10
CL14	28.108	2\$2	2S 3P	G 1S	1P*	91	
CA12	28.119	2 P5	2P4 3D	G 2P*	20	23	, 1D
P 13	28.154	2P	4 D	2P*	20	23	
CA12	28.598	2P5	2P4 3D	G 2P*	2 C	23	3P
CA12	28.667	2P5	2P4 3D	G 2P*	2 P	22	3P
CA12	28.738	2P5	2P4 3D	G 2P*	2 P	21	3P
CA12	28.799	2 P 5	2P4 3D	G 2P*	40	22	3P
CA12	28.883	2P5	2P4 3D	G 2P*	2 P	11	3P
CL15	29.006	2P	35	2P*	25	21	
CL14	29.403	2S 2P	2S 3D	3P*	3 C	61	20
CA12	29.666	2P5	2P4 3D	G 2P*	2 D	12	3P
K13	30.100	2\$22P3	2S22P2 3S	G 4S*	4 P	23	3P
, K12.	30.157	2S22P4	2S22P3 3D	· 10	1F*	23	20*
. P 11		2P	5D	G 2P*	20	23	204
K 12		2\$22P4	2S22P3 3D	1D	1C*	22	20*
S 14	30.416	28	3P	G 2S	2 P* 2 P*	12	
S 14	30.526	25	3P 2S22P3 3D	G 2S		11	45+
K 12	30.598	2\$22P 4 2P2	2S22P3 3D 2P 4D	G 3P 1D	3D# 1F#	23 23	4S* 2P*
CL13	31.097 31.178	25 2P2	2S 2P 3D	2D	2F*	25 34	2P* 1P*
K_11	31.327	23 2P2 2P 5	25 2P 3D	G 2P*	20	23	15
CL13	31.447	2S 2P2	2S 2P 3D	4P	4D*	23	3P*
K 11		2\$22P5	2S22P4 3D	G 2P*	20	23	15
P 12		2S 2P	2\$ 40	1P#	10	12	13
K. 11	31.696	2S22P5	2\$22P4 3D	G 2P#	20	12	15
S 13		2S 2P	2P 3P	3P*	3 D	23	• •
CL13	32.083	2 P3	2P2 3D	45*	4 P	22	3Р
CL 13	32.124	2P3	2P2 3D	45*	4 P	23	3P
S 13	32,238	252	2S 3P	G 1S	1P*	01	
	32.297	225	2P4 3D	G 2P*	2 D	23	10
_K_11		2P5	2P4 3D	G 2P*	2 P	22	10
_CL13	32.445	2.S 2P2	2S 2P 3D	2D	2F*	34	3P*
K.11		2P5	2P4 3D	G 2P*	2 D	23	3P
K_11		. 2P5	2P4 3D	G 2P*	2 P	11	3P
SI12		2P	4 D	2P*	2 D	23	
CA12			2S 2P5 3S	2\$	2P*	12	3P*
CA12		2S 2P6	2S 2P5 3S	2 S	2P*	12	
. P. 11			2\$ 2P 4D	4P	4D*	34	3P*
K11			2P4 3D	G 2P*	2 P	22	3P
P.11	33.102	. 2P	4D	.G 2P*	2 D	12	
	33. 134	2P5	2P4 3D	G 2P*	2 P	21	3P
<u>P</u> 11	33-174	2P	4D	G 2P*	- 2 C	23	
K11.	33.259	2P5	2P4 3D	G 2P*	4D	22	3P
S.14.	33.392	2P.	35	2P*	2 S	21	4.5
	33.553	2S 2P3	2S 2P2 3D	5 S *	5 P	21	4P
. CL12		2S 2P3	2S 2P2 3D	5S*	5 P	22	4P
CL12	33.592	2S 2P3	2S 2P2 3D	5S*	5P	23	. 4Р
. S. 13	33.822	. 2S 2P	2S 3D	3P*.	3 D	01	

		CONFIG	URATION	TE			PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	IJ	LOWER UPPER
, K 12	33.961	2\$22P4	2\$22P3 3\$	10	1C*	22	20*
K. 12	34.128	2S22P4	2\$22P3 3\$	G 3P	3S*	21	45*
K. 12	34.199	2\$22P4	2S22P3 3S	15	1 P *	01	2P*
P. 11	34.351	2S 2P2	2\$ 2P 4D	2D	2F*	34	3P*
K12	34.351	2522P4	2\$22P3 3\$	G 3P	35*	11	4 S*
ARII	34.811	2 522 P4	2S22P3 3D	1 D	1F*	23	2D*·
_ AR11	35.088	2S22P4	2S22P3 3D	1D	1D*	22	2D* ·
K. 11	35.602	2S22P5	2\$22 P4 3\$	G 2P*	2 S	21	15
K 11.	35.713	2P5	2P4 3D	G 2P*	2 D	12	3P
K 11	35.896	2S22P5	2S22P4 3S	G 2P*	2 S	11	18
S110	35.934	2P	5 D	G 2P*	2 D	23	
S 12	35.983	2S 2P2	2 S 2 P 3 D	2D	2 F *	34	1P*
. \$ 12	36.336	2\$ 2P2	2\$ 2P 3D	4P	4D*	23	3P*
P 10	36.523	2\$ 2P3	2S 2P2 40	5S *	5 P	22	4Ρ
AR10	36.540	2S22P5	2S22P4 3D	G 2P*	20	23	15
P 10	36.550	2S 2P3	2S 2P2 4D	5S*	5 P	23	4P
P 12	36.629	2S 2P	2P 3P	3P*	3 P	22	2P*
P 12	36.654	2S 2P	. 2P 3P	3P*	3 P	21	2P*
P 12	36.715	2S 2P	. 2P 3P	3P*	3\$	11	2P*
AR 9	36.722	2S22P6	2S22P5 4S	G 1S	11*K	01	2P*
AR10	36.757	2\$22P5	2S22P4 3D	G 2P*	2 C	12	15
\$111	36.758	2P2	2P 4D	1D	1F*	23	20*
P 12	36.794	2S 2P	2P 3P	3P*	3\$	21	2P*
AR 9	37.021	2S22P6	2S22P5 4S	G 15	22*K	01	2P*
85	37.025	15	8P	G 2S	2 P*	12	
P 12	37.026	2S 2P	2P 3P	3P*	3D -	11	2P*
P 12	37.065	2S 2P	2P 3P	3P*	3 D	22	2P*
S 12	37.135	2P3	2 P2 30	45*	4 P	22	· 3P
S 12	37.176	2 P3	2P2 3D	45*	4P	23	3P
8 5	37.206	15	7 P	G 2S	2P*	12	
·S111	37.322	2S 2P	2S 4D	1P*	1 C	12	
S 12	37.607	2S 2P2	2S 2P 3D	2D	2F*	34	3P*
K 11	37.616	2\$22P5	2S22P4 3S	G 2P*	2 P	11	3P
p 9	38.033	2P3	2P2 5D	2D*	2F	34	1D
K 11	38.056	2522P5	2\$22P4 3\$	G 2P*	4P	12	3P
K 11	38.193	2\$ 2P6	2S 2P5 3S	25	2P#	11	3P*
P 11	38.230	25 2P2	2P2 3P	4P	45*	22	3P .
P 11	38.294	2\$ 2P2	2P2 3P	4P	.45*	32	3P
K 11	38.355	2S 2P6	2S 2P5 3S	2 \$	2P*	12	3P*
K 11	38.406	25 2P6	2S 2P5 3S	2\$	2P*	. 12	
P 10	38.669	25 2P3	2S 2P2 4D	3D*	3F	34	4P
P 10	38 . 7 55	25 2P3	2\$ 2P2 4D	3 <i>0</i> *	3F	23	4P
P 11	38.843	2S 2P2	2P2 3P	4 P.	4P*	3.3	3 <u>P</u>
P 11	38.845	2S 2P2	2P2 3P	,4P	4D*	34	3P
S 11	39.001	2\$ 2P3	2S 2P2 3D	5S* .	5.P	. 21	<u>4P</u>
S 11	39.023	2S 2P3	2\$ 2P2 3D	5S*	5.P	22	4P
S 11	39.049	2S 2P3	2S 2P2 3D	5 <u>S</u> *	5 P	23	4P
AL 11	39.094	2P	4 0	2P*	2 D	. 12	
SI10	39.306	25 2P2	2S 2P 40	4P	4D*	34	3₽*
S110	39.426	2P	4 D	G 2P*	2 D.	12	
SI 10	39.512	2P	40	G 2P*	2 D	23	
P 11	39.541	2S 2P2	2P2 3P	20	2 C*	33	1 <u>D</u>
P 12	39.622	2\$ 2P	2P 3P	1P*	1 P	_ 11	2P*
AL10	39.627	2S 2P	2P 4P	3P*	3 C	23	, c , an
AR11	39.800	2S22P4	2\$22P3 3\$	15	1P* .	0,1	2P*
P 12	40.134	2P2	2P 30	, 3P	3.P* .	11	2P*

		CONFIGU	DATION	**	RM		PARENT-T	ENM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	_	PPER
P 12	40. 251	2P2	2P 3D	3P	3P*	21		20*
AL 10	40.433	2S 2P	25 50	1P*	10	12		€1. 1.
P 12	40.463	2P2	2P 3D	3P	30*	22		2P*
CL 8	40.504	2P6	2P5 5S	G 1S	22*K	01		2P*
\$110	41.023	2S 2P2	2S 2P 4D	20	2F*	34		3P*
P 9	41.040	293	2P2 4D	G 4S*	4 P	22		3P
p ģ	41.084	2P3	2P2 4D	G 45*	4D	21		3P
p ģ	41.143	2P3	2P2 4D	G 45*	4D	23		3P
p 9	41.430	2P3	2P2 4D	20*	2 D	33	,	1D
P 12	41.506	2S 2P	25 35	3P*	3.5	01		
P 12	41.533	2S 2P	25 35	3P*	3.5	ii		
c017	41.542	30	5F	2D	2F*	23		
P 12	41.666	2S 2P	2\$ 3\$	3P*	3.5	21		
P 12	41.691	292	2P 3D	1D	10*	22		2P*
FE15	41.880	3S 3P	3S 5D	3P*	30	23	25	25
p 9	42.077	293	2P2 40	2P*	20	23	•	10
P 11	42.189	2S 2P2	2S 2P 3D	4P	4 P*	12		3P*
P 11	42.217	2S 2P2	2S 2P 3D	4P	4P#	21		3P*
							### = W	
P 11	42.239	2S 2P2	2S 2P 3D	4P	4 P *	22		3P*
P 11	42.321	2S 2P2	2S 2P 3D	4P	4F*	32		3P*
AL10	42.322	2S 2P	2S 4D	3P#	3D	01		
P 9	42.414	2P3	2P2 4D	20*	2F	23	•	3P
P 11	42.551	2S 2P2	2S 2P 3D	4 P	4C*	33		3P*
P 12	42.653	2P2	2P 3S	3 P.	3P*	22		2P*
P 11	42.798	2S 2P2	2S 2P 3D	2P	2P*	11		1P*
SIII	42.832	2S 2P	2P 3P	3P*	3 P	22		2P*
5111	42.864	2S 2P	2P 3P	3P#	3 P	21		2P*
P 11	42.925	2S 2P2	2S 2P 30	2P	2P*	22		1P*
SIII	42.959	2S 2P	2P 3P	3P*	3\$	11		2P*
\$111	43.045	2S 2P	2P 3P	3P*	3\$	21		2P*
AL 9	43.263	2S 2P2 .	2S 2P 5D	4P	4D*	34		3P*
\$111	43.330	2S 2P	2P 3P	3P*	3 D	11		2P*
SI11	43.378	2S 2P	2P 3P	3P*	3 C	22		2P*
AL 9	43.440.	2P	. 5D	G 2P*	2D	12		
P 11	43.463	2P3	2P2 3D	45*	4P	21		3P
AL10	43.561	2P2	2P 4D	3P	3D*	23		
P 8	43.825	2P4	293 50	G 3P	3C*	23		20*
SI 9	43.911	2S 2P3	2S 2P2 4D	5S*	5 P	22		4P
51 9	43.940	2S 2P3	2S 2P2 4D	5S*	5 P	23		4 P
C016	44.268	3S 3D	3S 5F	3D	3F*	34		
P 10	44.446	2\$22P2	2S 2P2 3P	G 3P	3D*	22		4P
SI 10	44.900	2S 2P2	2P2 3P	4P	45*	22		3P
SIIO	44.965	2S 2P2	2P2 3P	4P	4 S *	32		39
P 10	45.172	2S22P2	2S 2P2 3P	G 3P	3S*	11		4P
P 8	45.287	2P4	2P3 5D	G 3P	3D*	23		4S*
CO17	45.322	3\$	4P	G 2S	2 P #	12		
C017	45.515	3\$	4P	G 2S	2P*	11		
SIIO	45.603	2S 2P2	2P2 3P	4P	4P*	33		3P
SI 10	45.664	2S 2P2	2P2 3P	4P	4C*	34		3P
P 10	45.997	2P2	2P 30	G 3P	3 P*	01		
P 10	46.140	2P2	2P 30	G 3P	3P*	12		
P 10	46.392	2P2	2P 3D	G 3P	3D*	22		
P 10	46.431	2S 2P3	2S 2P2 3D	3D*	3 C	33		2 D
P 8	46.452	2P4	2P3 4D	G 3P	3P*	22		2P#
\$110	46.571	2S 2P2	2P2 3P	2 D	20*	33		1D

		c	ONF I GL	IR A T	ION			TE	ERM	÷	PARENT	-TERM
LON			ER		UPPE	R	ı	OWER	UPPER	IJ	LOWER	
SI_8	46.582				2P2		•	2D*	2 F	34		10
SIII	46.653				2P	3P		1P*	1 P	11		2P*
SI 9	46.694			25	2P2		•	3D*	3 F	34		4P
P 10	46.726				2P2	30		3P*	3 S	21		2D
CT O	46.774	20 20	2		2P2			30*	3.5 3F	23		4P
MN14					35	5D		3P*	3D	12	25	25
P 8	47.140		_	, .	2P3		G	3P	3S*	21	23	2D*
					2P3		_	3P	3S*	11		2D*
P 11		25 2P		25	2P	35	•	2P	2P*	11		1P*
	47.280 47.332	23 2.F	2	23	2P	3D ·		3P	2 P +	11		2P*.
	47.368	∠r	<u> </u>		2P3		· c	3P	3P*	12	•	20*
				20	2P 3	4D	G	4P	40*	23		20+ 3₽#
	47.445				2P	3D		3P	40* 3P*	23		2P*
	47.447		2 .					45*		23		3P
_P_11			2		2P2	22		45*	4P			3P
	47.502		2	• • •	2P2				4P	22		3P 2P*
	47.700		4		2P	30		3P	3D*	22		
	47.859			25		35		2D	2P*	21		3P*
P 10	48 <u>.052</u> 48 <u>.</u> 226	2P	4		2P	3D	_	10	3F*	22		
<u>P8</u>	48.226	2P	4		2P3		G	3P	3P*	22		2P*
<u>PB</u>	48.301		9		2P3		_	1D	10*	22		20*
		25221	6				G	15	1P*	01		28
<u> P 10</u>	48.391	2S 2P	3	25	2P2		_	3D*	3.D.	33		4P
	48.629			~ ~	15	7P	G	15	1P*	01		20+
				25	2P	45	_	4P	4P*	33		3P*
	48.897				2P3		6	3P	-3D*	91		45*
2111	49.030	25			2\$	3\$		3P*	3\$	01		
	49.068				25	3\$	_	3P*	3 S	11		•
AL 9	49.083					45	G	2P*	25	21		
2T1T""	49. 200	25	2.P.	2.5	25	3\$		3P*	3S.	21		4P
	49.414			. 23	272	20		5S*	5 P	23		4P 2P*
	49.524				2P3 2P		_	10 3P	1P*	21		2P#
	49.763			20		5D	G	3P≠	3 P *	22		4P
	49.789				2P2 2P2	3D 3D		3P*	3 D.	12	•	4P
CO14	49.794	4.3. 4.4	3		35	4D		3P*	3D.	01	2\$	25
					2P	35		25	3D 2P*	01 12	23	23 3P#
	49.866 49.928				2P	4D		2 D	2F*	23		3P*
P. 11	49.976				2P	35		25	2P*	11		3P*
SI 10	49.981	25 2P		25	2P	30		4P	4P*	12	2.0	3P*
C016	50.010	35	3P		3 \$	4D		3P*	3D	11	25	25
\$110		2S 2P	2		2P	3D		4P	4P*	21		3P*
SI 10.	50.036	2S 2P		25	2P	3D	_	4P	4P*	22		3P*
SI 8	50.085	2P			2P2		G	45*	4C	21		3P .
SI 10	50.122	2S 2P		25	2P	3D	_	4P	4F*	32		3P*
8 12	50.136	2 P			2P2		G	45*	4 C	23		3P
SI 8	50.329	29			2P2			2D*	2F	34		1D 3P*
SIIO	50.394	2\$ 2P		25	2P	30		4P	4D*	33		
SI11 P 11	50.487	2P		20	2P	3S		3P	3P*	22		2P* 3P*
	50.635	2S 2P			2P	3\$		2P	2P*	22		30*
P 9	50.650	2S 2P		25	2P3			4P	4 S*	. 32		3U*
AL10	50.742	25			2P	3P		3P*	3P	11		
AL 8 P 9	50.761	2P		2.0	2P	5D		1D	1F*	23 23		30*
P 9	50.815	2\$ 2P			2P3			4P	40*	12		3D*
	50.887	2\$ 2P		23	2P3			4P 3P≉	40*			90₹
AL10 P 9	50.920	25		3.0	2P	3P		3P# 4P	3 \$ 4 P *	01 32		3D*
r 7	50 . 953	2S 2P	4	23	2P3	วบ		45	477	36		⊃ U*

		CONFIGU	IR ATTON	TERM	PARFN	T-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER UPPER	JJ LOWER	
P 9		2S 2P4	2S 2P3 3D	4P 4P*	33	3D*
P 8	51.048	2P4	2P3 4S	G 3P 3S*	21	45*
P 9	51.063	2S 2P4	2S 2P3 3D	4P 4P*	21	3D*
P 8	51.188	2P4	2P3 4S	G 3P 3S*	11	45*
SIIO	51.312	2S 2P2	2S 2P 3D	2P 2P*	ii	1 P#
SI 8	51.427	2P3	2P2 4D	2P* 2D	23	1 D
SI 10	51.433	2S 2P2	2S 2P 3D	2P 2P*	22	1P#
\$110	51.608	2P3	2P2 3D	4S* 4P	21	3P
P 9	51.877	2P3	2P2 3D	2P* 2P	11	10
P 9	52.203	2P3	2P2 3D	2P* 2C	12	1 D
P 7	52.358	2P5	2P4 5D	G 2P* 2D	23	3P
SI 9	52.917	2S22P2	2S 2P2 3P	G 3P 3D*	22	4P
P 9	52.939	2P3	2P2 3D	2D* 2P	21	3P
P 10	53.610	2S 2P3	2S 2P2 3S	3D* 3P	32	4P
P 10	53.737	2\$ 2P3	2S 2P2 3S	3D* 3P	21	4P .
SI 9	53.879	2\$22P2	25 2P2 3P	. G 3P 3S*	11	4P
P G	54.124	2P3	2P2 3D	2P* 2P	11	3P
CO11	54.229	3P5	3P4 5S	G 2P* 2D	23	1 D
AL 8	54.421	2S 2P3	2S 2P2 4D	3D* 3F	34	2D
P 7	54.669	2P5	2P4 4D	G 2P* 2S	21	10
P 10	54.811	2S 2P3	2S 2P2 3S	10* 1D	22	2D
SI 10	54.879	2P	35	G 2P* 2\$	11	
SI 9	55.032	2P2	2P 3D	G 3P 3P*	01	
SI 10	55.080	2P	3\$	G 2P* 2S	21	
SI 9	55.165	2P2	2P 3D	G 3P 3P*	. 12	
P 10	55• 286	2\$ 2P3	2S 2P2 3S	3P* 3P	22	4P
P 10	55.435	2S 2P3	2S 2P2 3S	3P* 3P	21	4.P
\$1 9	55.465	2P2	2P 3D	G 3P 3D*	22	
P 8	55.537	2P4	2P3 3D	G 3P 3D*	22	. 2P*
P 7	55.804	2P5	2P4 4D	G 2P* 2P	22	. 3P
P 6 P 7	55 . 880	2\$22P6	2S 2P6 3P	G 1S 1P*	01,	25
P 7	56 . 056 56 . 067	. 2P5 2P5	2P4 4D 2P4 4D	G 2P* 4P G 2P* 2D	23	3P 3P
SI 9	56 . 199	2S 2P3	2S 2P2 3D	3P* 3S	. 22 21	20
AL 9	56.344	25 2P2	25 2F2 3D 2P2 3P	2D 2F*	34	10
P 7	56.362	295 2P5	2P4 4D	G 2P* 2P	11	3P
AL 9	56.368	2S 2P2	2P2 3P	2D 2F*	23	ĩ0
P 7	56.425	2P5	2P4 4D	G 2P* 4P	12	3P
SI 10	56.527	2P3	2P2 3S	4S* 4P	23	3P
\$110	56.543	2S 2P2	2S 2P 3S	2P 2P*	11	1P*
P 10	56.575	2S 2P3	2S 2P2 3S	1P* 10	12	20
SI 10	56.599	2P3	2P2 3S	4S* 4P	. 22	3P
AL10	56.611	2P2	2P 3D	3P 3P*	01	
AL10	56.648	2P2	2P .3D	3P 3P*	10	
ALIO	56.717	2P2	2P 3D	3P 3P*	12	
P 8	56.740	2P4	·2P3 3D	G 3P 3S*	11	20*
P 8	56.849	2P4	2P3 3D	G 3P 3S*	01	20*
AL10	56.948	2P2	2P 3D	3P 3C*	.01	
P 9	56. 966	2P3	2P2 3S	2P* 2S	21	
P 8	57.074	2P4	2P3 3D	10 . 1F*	23	2P*
SIIO	57.304	2S 2P2	2S 2P 3S	202P.*	21	3P*
AL 8	57.336	25 2P3	2S 2P2 4D	3D* <u>3D</u>	33	4P
P 8	57.361	2P4	2P3 3D	G 3P 3D*	01	2D*
P 7	57.414	2P5	2P4 4S	G 2P* 2D	23	1D
AL 8	57.588	2S 2P3	2S 2P2 4D	3D* 3F	.12	4P.

		CONFIGU	RATION	TERM	PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER UPPER	JJ LOWER UPPER
BE 4	57.853.	15	8P	G 2S 2P*	12
C016	58.091	3S 3P	3S 4S	3P* 3S	01 25 25
BE 4	58.137	18	7P	G 2S 2P*	12
NA 8	58.213	2S 2P	2S 5D	3P* 3D	23
AL 7	58.367	2P3	2P2 5D	2D* 2D	33 10
MG 8	· 58.609	2S 2P2	2S 2P 4D	4P 4P*	33 3P*
SI 7	58.626	2P4	2P3 4D	G 3P 3P*	12 2D*
CO16	58.951	3\$ 3P	3S 4S	3P* 3S	21 2S 2S
P 9	59.081	2P3	2P2 3S	2P* 2D	23 10
P 7	59.231	2 P 5	2P4 4S	G 2P* 2P	12 3P
AL10	59.888	2P2	2P 3D	1S 1P*	01
SIIO	59 . 94 9	2S 2P2	2S 2P 3S	2S 2P*	12 3P*
SI 9	59.986	2S 2P3 .	2S 2P2 3D	3P* 3C	12 4P
SI 9	60.002	2S 2P3	2S 2P2 30	3P* 3D	01 4P
SI 7	60.008	2P4	2P3 4D	10 1C*	22 2D*
SIIO	60.090	2S 2P2	2S 2P 3S	2S 2P*	11 3P*
AL 9	60.261	2S 2P2	2S 2P 3D	4P 4P*	23 3P*
AL10	60.630	2P2	2P 3S	3P 3P*	12
AL10	60.648	2P2	2P 3S	3P 3P*	01
ALID	60.787	2P2	2P 3S	3P 3P*	10
AL10	60.928	2P2	2P 3S	1D 1P*	21
SIIO	60.938	2S 2P2	2S 2P 3S	2P 2P*	22 3P*
SI 7	60.943	2P4	2P3 4D	G 3P 3C*	01 4S*
SI 8	61.328	2S 2P4	2S 2P3 3D	4P 4S*	32 3D*
SI 8	61.509	2S 2P4	2S 2P3 3D	4P 4D*	23 30*
SI 7	61.564	2P4	2P3 4S	10 1P*	21 2P*
SI 8	61.583	2S 2P4	2S 2P3 3D	4P 4D*	12 30*
8 12	61.677	2S 2P4	2S 2P3 3D	4P 4P*	32 3D*
SI 8	61.714	2S 2P4	2S 2P3 3D	4P 4P*	33 3D*
SI 9	61.732	2P2	2P 3S	G 3P 3P*	11
SI 8	61.793	2S 2P4	2S 2P3 3D	4P 4P*	21 3D*
CO16 CO16	61.887 61.912	3\$ 3D	3S 4F 3S 4F	3D 3F* 3D 3F*	12
P 9	61.978	3S 3D 2S 2P4	2S 2P3 3S		23 12 5S*
C016	62.000	3S 3D	23 273 33 35 4F	4P 4S* 3D 3F*	34
NE 8	62.300	2P	55 4 5 60	2P* 2C	12
AL 7	62.392	2P3	2P2 4D	G 45* 4P	21 3P
AL 1	020372	273	272 4 0	0 +3+ +F	21 36
MN14	62.513	. 3\$ 3P	3\$ 4D	3P* 3D	01 25 25
. SI . 8	62.846	2P3	2P2 30	2P* 2P	11 10
. AL 7	62.863	2P3	2P2 4D	20* 2P	32 10
AL 9	62.955	2P3	2P2 3D	2D* 2F	34 10
AL8	63.433	2\$22P2	2S 2P2 3P	G 3P 3P*	12 4P
AL 8	63.546	2\$22P2	2S 2P2 3P	G 3P 3P*	22 4P
NA10	63.606	. 1S 2P	1S 3D	3P* 3C	23
.SI. 7	63.787	2 P 4	2P3 4S	G 3P 3S*	21 4S*
SI. 7	63.947	2P4	2P3 4S	G 3P 3S*	11 4S*
SI 8	64.226	2P3	2P2 3D	2D* 2P	21 3P
. S.I 9	64.941	2S 2P3	2S 2P2 3S	30* 3P	32 .4P
S.I. 9	65.085	2S 2P3	2S 2P2 3S	30* 3P	21 4P
AL10	65.281	2P2	2P 3S	1S 1P*	01
.AL 7	65.304	2P3	2P2 4S	G 4S* 4P	21 3P
SI.8	65.773	2P3	2P2 3D	2P* 2P	11 3P
NE 8	65.821	2P	50	2P* 2D	12
C011	66.026	3P5	3P4 4D	G 2P* 2D	22 1D
P. 8	66.240	2S 2P5	2S 2P4 3S	3P* 3D	23 20
AL _9	66.259	2S 2P2	2S 2P 3D	2S 2P*	11 3P*

٠.		CONETC	URATION	TEOM	0405NT T504	
ION	WAVELENGTH	LOWER	UPPER	TERM Lower upper	PARENT-TERM JJ LOWER UPPER	
CO11	66.310	325	3P4 4D	G 2P* 2D	23 LUWER UPPER	٠
NE 8	66.321	2P	5\$	2P# 2S	21	
\$19	66.548	2S 2P3	2S 2P2 3S	1D* 1D	22 20	
CO11	66.605	325	3P4 40	G 2P* 2P	22 10	
AL .9	66.729	2P3	2P2 3D	2P* 2D	23 10	
COll	66.841	3P5	3P4 4D	G 2P* 2D	12 10	
C011	66.991	3P 5	3P4 4D	G 2P* 2S	21 10	
AL8	67.118	2\$ 2P3	2S 2P2 3D	5S* 5D	23 4P	
SI 9	67.199	2S 2P3	2S 2P2 3S	3P* 3P	22 4P	
SI 9	67.358	2S 2P3	2S 2P2 3S	3P* 3P	21 4P	
AL., 8.	67.500	2S 2P3	2S 2P2 3D	3D* 3P	32 20	
AL 7	67.502	2P3	2P2 4S	2D* 2P	21 3P	
CO11	67.849	3P.5	3P4 4D	G 2P* 2S	11 10	
CO11	67.950	3P5	3P4 4D	G 2P* 2F	23 3P	
C011	67.956 67.989	3P5 3P5	3P4 4D	G 2P* 4F	23 3P	
CO11	67.999	3P5	3P4 4D	G 2P* 2D	22 3P	
AL 9	68.648	2P3	3P4 4D	G 2P* 2D	23 3P	
			2P2 3S	20* 20	33 - 10	
AL 8	68.753	2P2	2P 3D	10 1P*	21	
COLI	68.767	3P5	3P4 4D	G 2P* 2D	12 3P	
SI 9 AL 7	68.950	2S 2P3	2S 2P2 3S	1P* 1D	12 20	
AL 7 SI 6	69.027	2P3	2P2 4S	2P* 2P	22 3P	
NE 7	69.078 69.117	2P 5 2S2	2P4 40 2S 5P	G 2P* 2P	22 10	
AL 9	69.143	25 2P2	2S 5P 2S 2P 3D	G 1S 1P* 2P 2D*	01	
F 7	69.371	25 272	23 2P 30 10P	2P 2D* G 2S 2P*	12 3P*	
S I 8	69.496	2P3	2P2 3S	2P* 2S	21	
SI 6	69.613	2P5	2P4 4D	G 2P* 2P	11 10	
SI 7	69.677	2P4	2P3 30	G 3P 3S*	01 2D*	
AL 6	69.767	2P4	2P3 5D	G 3P 3D*	23 2D*	
F 7	69.975	25	9P	G 2S 2P*	12	
SI 7	70.332	2 P4	2P3 30	G 3P 3D*	0I 2D*	
P 8	70.354	2S 2P5	2S 2P4 3S	3P* 3P	22 4P	
F 7	70.882	2\$	8P	G 2S 2P*	12	
NE 7	70.994	2S 2P	25 60	3P* 3D	12	
SI 6	71.003	2P5	2P4 4D	G 2P* 2P	22 3P	
NE 7	71.049	2S 2P	2 \$ 6D	3P* 3D	23	
AL 8	71.241	2S 2P3	2S 2P2 3D	3D* 3D	33 4P	
AL 8	71.276	2S 2P3	2S 2P2 3D	3D* 3C	22 4P	
TIII	71.351	3S 3P	3S 5D	3P* 3D	12 2S 2S	
CO10 CO10	71.395	3P6	3P5 4D	1S 12*J	01 2P*1	
	72 . 372 72 . 794	3P6	3P5 4D	1S 23*J	01 2P*2	
AL B AL B		25 2P3	2S 2P2 3D	3D* 3P	21 4P	
	72.924	2S 2P3	2S 2P2 30	3D* 3P	32 4P	
AL 8 MN14	73.404 74.045	2\$ 2P3 - 3\$ 3P	2S 2P2 3D	10* 1F	23 2D	
MG 9	74.062	3S 3P 2P2	35 45	3P* 3 \$	01 25 25	
NA 7	74.312	2S 2P2	2P 30 2S 2P 40	1S 1P* 4P 4P*	01 32 3P*	
NE 7	74.481	2S 2P	2S 5D	3P* 3D	32 3P* 12	
NE 8	74.544	23 2F 2P	23 30 45	2P* 2\$	11	
NE 7	74.611	2S 2P	2S 5D	3P* 3D	23	
NA 8	74.993	2S 2P	2P 3P	3P* 3P	12	
F 7	75.382	2.5 2.P	130	2P* 2D	23	
C012	75.506	3P4 ~	3P3 4S	1D 1P*	21 2P*	
CO12	75.605	3P4	3P3 4S	G 3P 3C*	23 2D*	
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		CONF I GU	IR AT I ON	TE			PARENT-	TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER		JJ		
C012	75.931	3P4	3P3 4S	G 3P	3C*	22		2D*
AL 8	76.012	2S 2P3	2S 2P2 3D	1P*	10	12		20
F 7	76.073	2P	90	2P*	2 D	23		
8 12	76.298	2S 2P4	2S 2P3 3S	4P	45*	12	- 14111 224 442. 19411 234	5S*
AL 6	76.399	2P4	2P3 4S	G 3P	3P*	22	17.2 12. 20.000 00. 00.00	2P*
CO12	76.864	3P4	3P3 4S	G 3P	30*	12		2D*
C012	76.884	3P4	3P3 4S	G 3P	3D*	11	1 11 11 11 11 11 11 11 11	2D*
V 12	76.904	3S 3D	3S 5F	3D	3F*			
FE10	77.001	3P5	3P4 4D	G 2P*	2 P	12		10
C012	77.003	3P4	3P3 4S	G 3P	3D*	01		2D*
F 7	77.122	2P	8D	2P*	2D			
NA 7	77.196	2S 2P2	2S 2P 4S	4P	4 P*			
NA 7	77.258	. 2P	45	G 2P*	25	_11_		
NE 7	77.309	2P2	2P 5D	3P	3C*	23		
C012	77.701	3P4	3P3 4S	G 3P	3 S*	~ ~		4.0.0
CO12	77.744	3P4	3P3 4S	10	10*	22		2D*
CO12	78.085	3P4	3P3 4S	15	10*	01		2P*
COLL	78.550	3P5	3P4 4S	G 2P*	25	21		15
CO12	78.669	3P4	3P3 4S	G 3P	35*	11		
	78 . 759	3P4	3P3 4S	G 3P	35*	01		
CO12 MN14			3S 4F	3D	3F*	34	2.\$	
🗕 .	79.732	3\$ 3D 2\$2 2P	2S 2P 3P	G 2P*	20			
NA 7	79.745			2D	20*			
NA 7	79.921	2S 2P2	2S 2P 4D			12		
NE 7	80.573	2S 2P	2P 4P	1 <u>P</u> *	10	12		
F 7	81.171	2P	6D	2P.*	2D			
AL 8	81.326	2S 2P3	2S 2P2 3D	3S*	.3.P.	12	- 1 1 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	. 4
F 7	81.513	2P	6S	2P*	2\$	21		٠.
NE 7	82.207	2S 2P	2S 4D	3P*	.3D	12		
CAID	82.265	3P.	6D	2P*	.2D	1.2		
T112	82.524	30	5 F	2D	2F.*	. 23		and the second
CA10	82.612	3 P	6D	2P.*	. 20	23 .		
CA10	82.800	3\$	5P	G 2S	2P#	. 12		
CAID	82.866	3\$	5P	G 25,	2P*	11		
MG 6	83.174	2P3	2P2 4D	20*	2D	22		3P
SI 5	83.316	2P6	2P 5 5S	G 15	22*K			2P*
AL 8	83.737	2S 2P3	2S 2P2 3S	3P*	3P	10		<u>4P</u>
MG 6	83.926	2P3	2P2 4S	G 4\$*	.4P.	.21		3 P
MG 7	84.058	2S 2P3	2S 2P2 3D	30*	3C	33		2D
NA 7	85.320	2 S 2 2 P	2S 2P 3P	G 2P*	2 S	11		3P#
F 7	85.753	2P	5 D	2P#	20	12	*	
NE 6	86.074	· 2P	6D	G 2P*	. 20	12		
NE 6	86.171	2P	. 6D	G 2P*	2D	23		
F 7	86.457	2P.	55	2P*	25	21		
V 11	86.817	3S2 3P	3S2 4D	G 2P*	2 D	12	15	1,5
AL B	87.165	2S 2P3	2\$22P 3P	3D*	3 P	32	-	
MG 7	87.223	2S 2P3	2S 2P2 3D	3P*	3 P	22		20
AL 8	87.295	2S 2P3	2522P 3P	3D*	3 P	21		
MG 6	87.423	2P3	2P2 4S	20*	2 P	21		3P
V 11	87.506	3S2 3P	3S2 4D	G 2P*	20	23	18	18
F 6	90.799	252	2S 5P	GIS	1P*	01		
TI11	90.843	3S 3D	3S 5F	3D	3F*	34		
NA 6	91.436	2P2	2P 4S	G 3P	3P*	10	-	
NA 6	91.510	2P2	2P 4S	G 3P	3P*	21		
MN11	91.628	3\$23P3	3S23P2 4S	G 45*	4 P	23		3P
FE10	91.701	3P5	3P4 4S	G 2P*	25	11		15
CR13	91.808	3S 3D	3S 4F	3D	25 3F*	34	2\$	25
01/13	210030	33 3U	93 4 f	20	J [**	J T	23	20

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		CONFIGU	RATION	, TEI	RM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER
MN11	92.237	3S23P3	3S23P2 4S	G 45*	4 P	22	3P
MN11	92.401	3S23P3	3S23P2 4S	2D*	20	22	10
MNII	92.681	3S23P3	3S23P2 4S	20*	20	33	10
MN11	92.733	3\$23P3	3S23P2 4S	G 45*	4P	21	3P
NA 7	92.764	2S 2P2	2S 2P 3D	4P	4P*	11	3P*
NA 8	93.249	2P2	2P 3S	3P	3P*	11	
NA 6	93-676	2P2	2P 4D	15	1 P*	01	
NE 7	94.262	2\$ 2P	2P 3P	3P*	3 P	11	
NE 7	94.269	2\$ 2P	2P 3P	3₽*	3P	12	
F 6	94.403	2\$ 2P	2S 60	3₽*	30	12	
F 6	94.460	2S 2P	2S 6D	3₽ *	3 D	23	
SC 9	94.517	3\$2 3P	3S2 5D	G 2P*	2 D	12	
SC 9	95.025	3S2 3P	3S2 5D	G 2P*	20	23	
AL 7	95.079	2S 2P4	2S 2P3 3S	20	20*	33	3D*
CO 9	95.890	3P6 3D	3P53D 4S	G 2D	20*	23	3D*
CO 9	96.026	3P6 3D	3P53D 4S	G 2D	2C*	22	3D*
		3P6 3D		G 2D	20*	33	30*
CO 9	96.117		3P53D 4S				
CR 9	96.171	3P4 _.	3P3 4D	10	1F*	23	20*
CD 9	96. 246	3P6 3D	3P53D 4S	G 20	20*	32	3D*
_NA 7	96.337	2S 2P2	2S 2P 3D	2\$	2P#	12	1P*
CR 9	96.437	3P4	3P3 4D	10	10*	22	2D *
NE 6	97.028	2S 2P2	2S 2P 4D	4P	4C*	12	3P*
NE 6	97.085	25 2P2	2S 2P 4D	4P	4P#	32	3P*
CR 9	97.091	3P4	3P3 4D	G 3P	3C*	23	4S*
E 7				2P*			43+
	97-261	2P	45		2\$	11	
	97.507	3P6 3D	3P53D 4S	G 2D	40*	33	3D*
<u>CO 9</u>	97.763	3P6 3D	3P53D 4S	G 2D	4D*	34	30*
CR 9	97.910	3P4	3P3 4D	G 3P	3C*	12	4S*
CR 9	97.941	3P4	3P3 4D	G 3P	3D*	01	45*
<u> F 6 </u>	98-038	2S 2P	2P 4P	3.P.*	3 C	23	
_MG_5	98.185	. 2P4	2P3 4D	G. 3P.	35*	21	20*
MG 5	98.367	2P4	2P3 4D	G 3P	35*	11	2D*
_CO 9	98.922	3P6 3D	3P53D 4S	G 20	2F*	23	3F*
_E6	99.047	2S 2P	2S 5D	3P*	30	12	
_CO 9	99.173	3P6 3D	3P53D 4S	G 2D	2F*	33	3F*
NA 5	99.194	2P3	2P2 5D	G 45*	4P	22	3 P
NA 5	99.233	2P3	2P2 5D	G 45*	4 P	23	3P
K 9	99.395	3P	6D	2P*	20	12	3,
CAID	99.445	3P	55	2P*	25	11	
_K_9_	99. 770	. 3P	. 6D	2P*	20	23	
_CO_9	99.789	3P6. 3D	3P53D 4S		2F*	34	3F*
<u></u>	100-085	.3P6 .3D	3P53D 4S	G 2D	4F*	23	3F*
NE 6	100.444	2S 2P2 .	2S 2P 4S	4P	4P*	23	3P*
_CO_9	100.531	3P6 3D	3P53D 4S	G 2D	4F*	34	3F*
CO_9	100.595	3P6 3D.	3P53D 4S	G 2D	2 P *	22	3P*
	101.077	2S 2P2	.2S 2P 4S	4P	4P*	32	3P*
	101.093	3P6 3D	3P53D 4S	G 2D	2P*	21	3P*
	101-163	3S2 3P	3S2 4D	G 2P*	20	12	15 15
	101.240	2S2 2P	2S 2P 3P	G 2P*	2P	22	1P*
	101.456	2S2 2P	2S 2P 3P	G 2P*	2D	12	1P*
	101.578	252 2P	2S 2P 3P	G 2P*	2D	23	1P*
	101-678	3P4	3P3 5S	G 3P	3S*	21	4S*
				G 4S*			•
	101.754	2P3	2P2 5S		4P	23	3P
	101.782	3P6 3D.	3P53D 4S	G 2D	4P#	32	3P *
_NE_D	101.786	2 P	. 4 S	G 2P*	2 S	11	

		CONE	T T C L	RATION			т.	- n M		PARENT	_TEDM
	MANGERICAN		.160		n		OWER	ERM Upper	JJ		UPPER
ION	MAYELENGTH	LOWER 3S2 3		UPPE# 3\$2			2P*	2D	23	15	15
	101.902 102.320	394	7	3P3	5 S		3P	3S*	11	13	4S*
V8	102.477	3P4		3P3	5S		3P	3S*	01		45*
Y8	103.136		2 P	25	6D	G	1P#	1D	12		43.
_F_6	103.207	27 Z	2.5	2 P	5 D		3P	3C*	23		2P*2
F 6	103.223	2P2		29	5D		3P	3D*	23		
NE 5	103.306	2S 2P2		2P2			4P	4P*	33		3P
_ CR_8	103.694	3P5		3P4	4D	G	2P*	2 P	11		1D
CR 8	104.003	3P5		3P4	4D		2P*	2 P	12		1D
NE 6	104.111	2S 2P2		2P2	3P	G	4P	4D*	34		3P
V 11	104.769	3S 3P2		3S 3P	45		4P	4P*	23		3P*
y 11	105.033	3S 3P2		3S 3P	45		4P	4P#	12		3P*
NE 6	105.229	2S 2P2		2S 2P	4D		2D	2D#	33		3P*
		3S 3P2		3S 3P	45		4P	4P*	33		3P*
<u>y</u> 11	105 073	3S 3P2		3S 3P	45		4 P	4P*	21		3P*
V 11	106.003	3S 3P2		3S 3P	45		4P	4P*	32		3P*
NA 5	106.063	2P3		2P2	4D	G	45*	4 P	21		3P
NE 5	106.291	2P2		2 P	6D		3P	3C*	23		-
F 6	106.446		2 P	2 P	4P	Ŭ	1P*	10	12		2P*2
F 6	106.460		2 P	2 P	4P		10*	10	12		-
CR10	106.503	3S23P3	- ·	3S23P2	45	G	45*	4P	23		3P
NA . 5	106.651	2P3		2P2	5D	•	2P*	20	23		3P
MN 9	106.659	3 P 5		3P4		G	2P*	25	11		15
V 12	106.679	3S 3D		35	4F	•	3 D	3F*	23		
v 11	106.720	3\$2 3	3 P	3\$2		G	2P*	25	11	15	15
V 12	106.802	3S 3D		3\$	4F	•	30	3F*	12		
V 12	106.916	3S 3D		35	4F		30	3F*	34		
NA 7	107.025	2 S 2 P 2		2S 2P	35		25	2 F *	12		1P*
CR10	107.166	3S23P3			45	G	45*	4 F	22		3P
CR10	107.514	3S23P3			45	_	2D*	2 C	22		1D
NA 6	107.663	2P2		2P	3D	G	3P	3C*	11		
NA 5	107.687	2P3		2P2	4D	_	20*	2 P	32		1 D
CR10	107.703	3S23P3		3S23P2	45	G	45*	4 P	21		3P
CR10	107.808	3S23P3		3S23P2	45	_	2D*	2 D	33		10
V 11	107.823	352 3	3P	352		G	2P*	2 \$	21	15	15
F 6	108.501		2P	25	5 D	_	1P#	10	12		
NE 5	108.945	2S 2P3		2S 2P2	5 0		5 S *	5 P	23		4P
NE 6	109.084	2S 2P2		2P2	3P		2D	2F*	23		1.D
NE 5	109.127	25 2P2		2P2	/		2D	2F*	34		10
NE 6	109.368		P .	2S 2P	3P	. G.		25	11		3P*
NE 7	109.778	2P2	· F	23 2P	30		3P	3 P*	11_		2P*
NE 5	110.146	2P2	•	2P	5 D	Ğ	3P	3 C *	12		
NE 5	110.422	2P2		2P	5D		3P	3P*	22		
NA 5	110.677	2P3		2P2	1-8	9	2P*	2 P	22		10
NE 6	111.017		Ρ	2S 2P		G	2P*	2D	12		3P*
MG 5	111.558	2P4	• • •	2P3			3P	3P*	01		2P*
F 6	112.118		P		45	y .	3P*	35	21		
NA 6	113.133	2P2		2P			10	3F*	22	······································	
V 8	113.302	3P4	*	3P3			10	1F*	23		2D*
NE 6	113.429	25 2P2		2S 2P			2P	2D*	23		3P*
v 8	113.623	3P4		3P3			10	10*	22		20*
F 6.	113.819	2P2		2P	4D		3 P	3C*	12	***************************************	2P*2
NE 6	114.095		Р	2S 2P	3P	G	2P*	2P	12		3P*
NE 6	114.143		P	2S 2P	3P		2P*	2.9	11	,	3P*
NE 5	114.280	2P2	••.	2P	50	•	10	10*	22		
NE 6	114.305		P	2S 2P	3P	G	2P#	2 P	21		3P*
								· ····			

		CONFIGU	RATION	TE			PARENT	-TERM
ION	WAVELENGTH	LOWER	UPPER		UPPER		LOWER	
V 8	114.573	3P4	3P3 4D		3D*	23		45*
MG 5	115.017	2P4	2P3 3D	1D:	1E*	23		2P*
V 10	115.157	3S23P2	3S23P 4S	G 3P	3P*	12_		2P*
v 8	115.416	3P4	3P3 4D	G 3P	3D*			45*
v 8	115.570	3P4	3P3_4D	G 3P	3D*	01		45*
NA 5	115.648	2 P 3	2P2 4D	2P*	2 P	_11_		3P
V 10	115.651	3S23P2	3\$23P 4\$	G 3P	3P*			
NA 5	115.724	2P3	2P2 4D	2P*	2 P	22		3P
v 10	115.852	3S23P2	3523P 45	G 3P	3₽*	22		
V 10	116.200	3S23P2	3S23P 4S	G 3P	3 P*	11		2P*
v 10	116.367	3S23P2	3S23P 4S	G 3P	3P*	10		
V 10	116.898	3S23P2	3S23P 4S	G 3P	3P*	21		2 D#
NE 5	117.546	2P2	2P 4D	G 3P	3P*	12		
V 13	118.041	3D	4P	2D	2P*	32		
NE 5	118.280	2P2	2P 5D	15	1P*			
			2P 4D	G 3P	30*			
NE 5 NE 5	118.398	2P2	2P 4D	G 3P	3C*			
	118.452	2P2	4.0	2D	2P*			
V 13 .	118.465							
NE 5	118.663	2P2	2P 4 D	G 3.P.	3.P*	10		
NE 5	118.677	2P2	2P 4D	G 3P	. 3P*	11.		
NE 5	118.764	2P2	2P. 4D	G 3P	3P*	21		4
NE 5	119.072	2S 2P3	2S 2P2 4D	3D *	3.F	34		2D
K 9	119.095	3P	. 5 S	2P*	2.\$	11		
CA 9	120.133	3\$2	3\$ 4P	G 1S	1 P*	01		25
NE 6	120.151	2S 2P2	2S 2P 3D	4P	4P*	11		3P*
NE 7	120.368	2P2	2P 3S	3P	3 P.*	.11		
NA 5	121.508	2P3	2P2 4S	2P#	2 P	11		3P
T110	123.035	3\$ 3P2	3S 3P 4S	4P	4P*	. 23		3P*
TI 10	123.329	3S 3P2	3S 3P 4S	4P	4P*	12		3P*
V 7	123.358	3P5	3P4 4D	G 2P*	2 P	11		10
TI 7	123.622	3P4	3P3 5S	G 3P	3 S*	21		45*
TIIO	123.658	3S 3P2	3S 3P 4S	4 P	4P*	33		3P*
K 8	123.729	3S 3P	3 S 5 D	3P*	30	12	2.5	25
NE 5	123.952	2P2	2P 4D	10	3F*	22		
TI10	124.185	3S 3P2	3S 3P 4S	4P	4P*	21		3P*
TI 7	124.335	3P4	3P3 5S	G 3P	3S*	11		45*
TIID	124.382	3S 3P2	3S 3P 4S	4P	4P*	32		3P#
NA 7	124.526	2S 2P2	2S2 3P	2D	2P*	21		
TI 7	124.535	3P4	3P3 5S	G 3P	3S*	01		45*
NE 5	124.582	2P2	2P 4S	G 3P	3P*	01		
NE 6	125.132	2S 2P2	2S 2P 3D	2\$	2P*	12		1P#
TI10	125.601	3S2 3P	3\$2 4\$	G 2P*	25	11	18	15
TI 11	125.608	3 S 3 D	3S 4F	3D	3F*	23		•
TIII	125.940	3S 3D	3S 4F	3D	3F*	12	25	25
TIII	125.979	3S 3D	3S 4F	3D	3F*	23	25	25
TI11	126.017	3\$ 30	3S 4F	30	3F*	12	23	23
NE 6	126.144	2S 2P2	2S 2P 3D	2 P	2F*	11	*	1P*
T111	126.160	3S 3D	3S 4F	3D	3F*	34		* F **
TI 10	126.800	35 30 352 3P	352 4S	G 2P*	25	21	15	15
NE 6			2S 2P 3D	2P 2P	23 2P*	22	13	19*
	127.428	2\$ 2P2		2P 2D*		32		10
NE 6	127.680	2P3	2P2 3D		2 P			
NE 6	128.214	2P3	2P2 3D	20*	2 F	34		10
NE 6	128.235	2P3	2P2 3D	2D*	2F	23		1D
NE 5	129.457	2S 2P3	. 2S 2P2 4D	3D*	3 C	33		4P
V 9	129.688	3 S2 3 P 3	3S23P2 4S	20*	2 P	32		3P

and the second s		URATION	TERM		NT-TERM
ION HAVELENGTH	LOWER -	UPPER	LOWER UPPER	JJ LOWE	
NE 6 129.786	2P3	2P2 3D	2D* 2D	33	10
NE 5 130 148	2S 2P3	2S 2P2 4D	3D* 3F	12	4P
AL 4 130.357	2P6	2P5 30	G 1S 22*K	01	2P*
NE_5 130.719	2S22P2	2S 2P2 3P	G 3P 3P*	. 12	4 P
NE 5 130.837	- 2522P2	2S 2P2 3P	G 3P 3P*	22	4 P
NA 5 131.651	2P3.	2P2 3D	2P* 2D	12	1D
NE 5 131.956	2S22P2	2S 2P2 3P	G 3P 3D*	12	4 P
NE 5 132.008	2S22P2	2S 2P2 3P	G 3P 3C*	23	4 P
NE 5 132.086	2\$22P2	2S 2P2 3P	G 3P 3C*	22	4P
E 5 132.221	25 2P2	2S 2P 4D	4P 4F*	21	3P*
NA 4 132.392	2P4	2P3 4D	G 3P 3P*	22	2P*
_SC14132.930	2\$22P4	2S 2P 5	1S 1P*	01	
NE 5 134.812	2P2	2P 4S	1S 1P*	01	
<u>NE 5</u> 135.724	.2\$22P2	2S 2P2 3P	G 3P 3S*	11	4 P
NE 5 135.860	2\$22P2	2S 2P2 3P	G 3P 3S*	21	4 P
<u>F 6 136.563</u>	. 2P2	2S 4F	1D 1F*	23	
<u>II 9 136.585</u>	3.\$23P2	3\$23P 4\$	G 3P 3P*	12	2P*
<u>11 9 137-137</u>	3S23P2	3S23P 4S	G 3P 3P*	01	2P*
TI 9 137.364	3S23P2	3S23P 4S	G 3P . 3P*	22	2P*
MG_5137.483	2P4	2P3 3S	G 3P 3D*	22	2D* .
_TI_9137.723	3\$23P2	3S23P 4S	G 3P . 3F*	11	2P*.
<u>F_5137.856</u>	2S. 2P2	2S 2P 4S	4P 4P*	23	3P*
<u>V 6 137.861</u>	3P6	3P5 4D	1S 12*J	01	2P*1
<u>11 9 137.947</u>	3S23P2	3S23P 4S	G 3P 3P*	10	2₽*
NA 4 138.189	2P4	2P3 5D	G 3P 3D*	23	45*
NE 6 138.313	2P3	2P2 3D	2P* 2D	23.	1 D
_TL_9138.510	3S23P2	3S23P 4S	G 3P 3P*	21	2P*
V6139.235	3P6 .	3P 5 4D	1S 23*J	01	2P*2
1112 139.861	3 D	4P	2D 2P*	32	
NE 4 140. 234	2P3	2P2 5D	G 4S* 4P	22	3P
NE 4 140 283	2P3	2P2 5D	G 4\$* 4P	23	3P
111214Q.338	30	4P	2D 2P*	21	
NE_6140.910	2S 2P2	2S 2P 3S	2\$ 2P*	12	1P*
NA 6 141-128	2S 2P3	2S 2P2 3S	3P* 3P	10	4 P
K. 7. 141.784	3S2 3P	3S2 5D	G 2P* 2D	12	
K 7 142.365	3S2 3P	3S2 5D	G 2P* 2D	23	
NE 6 142.608	2P3	2P2 3S	4S* 4P	23	3P
NE 5 142.678	2S 2P3	2S 2P2 3D	3D * 3D	33	2 D
NE. 4 142.793	2P3	2P2 5D	20 20	33	1 D
NE5 143.413	2S 2P3	2S 2P2 3D	3D* 3P	32	2D
NE 6 143.551	2P3	2P2 3S :	2D* 2D	33	10
K8 143.804	3\$2	3S 4P	G 1S 1P*	01	25
NE 5 144.407	2S 2P3	2S 2P2 3D	3D* 3F	34	20
NE 6 144.628	2S 2P2	2S 2P 3S	2P 2P*	11	1P*
NE 5 .144.687	2P2	2P 3D	G 3P 1C*	12	10.
NE 6 144.754	25 2P2	2S 2P 3S	2P 2P*	22	1P*
NE 5 144.928	2P2	2P 3D	G_3P 3F*	23	204
F 6 145.157	2P2	2P 30	.3P 3P*	11	2P*
K 14 147.599	2S22P2	2S 2P3	G 3P 3S*	01	3P
MG. 4 147.640	2P5	2P4 3D	G 2P* 4P	21	3P
MG 4 147.697 NE 4 148.629	2P5	2P4 3D	G 2P* 4P	23 21	3P
	2P3	2P2 4D	G 4S* 4D		3P
NE 4 148.955 NE 5 149.529	2P3	2P2 4D	G 4S* 4D 3P* 3D	23 23	2D
	2S 2P3 2P4	2S 2P2 3D 2P3 3D	3P* 3D G 3P 3C*	23 22	2U 2P*
	25 2P3	28 2P2 3D	3P* 3P	22	2D
NE 5 150.375	23 275	43 645 30	3FT 3F	CL	20

		CONFIG	URATION	TE	RM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER
K 14	150.537	2S22P2	2S 2P3	G 3P	3S#	11	EGMEN OFFER
NA 4	150.685	2P4	2P3 3D	G 3P	3P*	21	2P*
NA 4	150.903	2P4	2P3 3D	G 3P	3P*	11	2P*
NA 4	150.944	2P4	2P3 3D	G 3P	3P*	10	2P*
NE 5	151.430	2P2	2P 3D	10	3F*	22	21.4
NA 5	151.615	2 2P3	2P2 3S	2D*	20	22	10
K-14	151.761	2S22P2	2S 2P3	10	1P*	21	10
NA 6	152.014	25 2P3	2S22P 3P	30*	3 C	33	
NE 4	153.339	23 2F3 2P3	/ 2P2 50	2P*	2D	23	3 P
K 14	153.994	2522P2	2S 2P3	G 3P	3 S*	21	31
NE 6	154.104	2322F2 2P3	23 2P3 2P2 3S	2P*	2 C	23	10
NA 5		2P3		2P*	2 D 2 P	22	3P
CO 9	154.426		2P2 3S 3P53D2		_		34
	155.144	3P6 3D		G 2D	2D*	.23	20*
NA 4	155.412	2P4	2P3 3D	G 3P	3 \$ *	11	2D*
CO 9	155.669	3P6 3D	3P53D2	G 20	20*	32	204
NA 4	155.721	2P4	2P3 3D	G 3P	3P*	11	2D*
NE 5	156.134	2S 2P3	2S 2P2 3D	30*	3 C	33	4P
NE 5	156.196	2S 2P3	2S 2P2 3D	3D*	3 D	2.2	4P
CO 9	156.659	3P6 3D	3P6 4P	G 2D	2 P *	22	
CO 9	157.292	3P6 3D	3P6 4 P	G 2D	2P*	32	
CO 9	157.779	3P6 3D	. 3P6 4 P	G 2D	2P*	. 21	
K 13	157.878	2S22P3	2S 2P4	2P*	2 P	22	
F 4	158.383	2P2	2P 5 0	G 3P.	3D*	.12	· visite of the control of the
NE 5	158.608	2S 2P3	2S 2P2 3D	3D*	3F	34	4P
NE 5	158.743	2S 2P3	2S 2P2 3D	30.≠	3F		4P
NE 5	158.842	2S 2P3	2S 2P2 3D	3D* .	3F	12	4P
CO10	158.903	3P6	3P5 3D	18	1P*		2P*
NE 6	159.062	2P3	2S 2P 3P	20*	2.P		1 P*
NE 4	159.783	2S22P3	2S 2P3 3P	G 45*	4 P	23	5S*
NE 5	159.931	2S 2P3	2S 2P2 3D	30*	3P		4P
NE 5	159.986	2S 2P3	2S 2P2 3D	30*	3 P.		4P
NA 6	160.933	2S 2P3	2S22P 3P	3P*	30	. 23	
MG 3	161.091	2P6	2P5 6D	G 1S	12*K		2P*
NA 6	161.233	2S 2P3	2\$22P 3P	3P*	3.0	12	
NE 5	162.048	2S 2P3	2S 2P2 3D	10*	1 F	23	20
TI 5	163.076	3P6	3P5 5S	G 1S	11*K	01	2P*
K 13	164.137	2S22P3	2S 2P4	2P*	25	ii	,
MG 3	164.282	2P6	2P5 5D	G 15	12*K	01	2P*
TI 5	164.445	3P6	3P5 5S	G 15	22*K	01	2P*
NE 5	164.459	2S 2P3	2S 2P2 3D	3P*	3D		4P
NE 5	164.538	2S 2P3	2S 2P2 3D	3P#	3.D	01	4P
V 7	164.563	3S23P5	3S23P4 4S	G 2P*	4P	12	39
NE 5	164.635	2S 2P3	2S 2P2 3D	3P*	3D	12	4P
NE 4	164.893	29 2P3 2P3	2P2 4D	2P*	2 P	11	3P
NE 4	164.996	2P3	2P2 4D	2P#	2 P	22	3 <u>P</u>
F 5				2P	2P#	11	1.D±
	166.018	2S 2P2		2P*	25		19*
K 13	166.121	2S22P3	2S 2P4		23 1P*	21	
LI 2	166.376	152	1S 7P	G 1S		01	20
NE 5	166.767	2S 2P3	2S 2P2 3S	, 3D*	3D	33	2D
CO12	167.926	3P4	3P3 3D	G 1D	. 1F*	23	20*
0 5	168.131	2S 2P	2P 3P	3P*	3C	22	2P*2
F 4	168.356	2P2	2P 4D	G 3P	3P*	12	
CO12	168.472	3P4	3P3 3D	G 3P	3D*	23	2P*
NE 6	168.705	2S 2P2	2S2 3P	2D	:2P*	32	·
NE 6	168.799	2S 2P2	2S2 3P	2D	2P*	21	

		CONFIG	URATION	TERM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER UPP	ER JJ	LOWER UPPER
CO12	169.130	394	3P3 3D	G 3P 3D		2P*
F 4	169.321	2P2	2P 4D	G 3P 3C	* 11	•
F 4	169.391	2P2	2P 4D	G 3P3D	* 22 .	
TI 7	169.853	3P4	3P3 4S	G 3P 10	* 12	2D*
TI 5	170.159	3P6	3P5 4D	1S 12	*J 01	2P*1
CO12	170.418	3P4	3P3 3D	G 3P 30	* 12	2P*
MG 3	171.247	2P6	2P5 4D	G 1S 22	*K 01	2P*
NE 5	171.270	2S 2P3	2S 2P2 3D	1P* 1D	12	20
TI 5	171.950	3P6	3P5 40	15 23		2P*2
K 14	172.181	2S22P2	2S 2P3	10' 10		
C012	172.519	3P4	3P3 3D	10 10		2P*
NE 4	172.755	2P3	2P2 3D	G 4S* 4E	21	3P 3D*
NE 4	172.854	2\$ 2P4 ·	2S 2P3 3D 2S 2P3 3D	4P 4S 4P 4D	•	3D*
NE 4	173.246	2S 2P4 2S 2P4	2S 2P3 30 2S 2P3 30	4P 4D 4P 4D		30*
NE 4 N 6	173.382 173.886	23 274 15 2P	1S 3D	3P* 3D		30+
NE 4	173.926	2S 2P4	2S 2P3 3D	4P 4P		30*
NE 4	173.981	2S 2P4	2S 2P3 3D	4P 4P		3D*
NE 4	174.119	2S 2P4	2S 2P3 3D	4P 4P		3D*
CO13	174.878	3P3	3P2 3D	2D* 2F		10
K 14	175.397	2S22P2	2S 2P3	1S 1P		
CO12	175.766	. 3P4	3P3 3D	G 3P. 3P		2P*
NE 4	177.008	2P3	2P2 3D	2D* 2F	23	10
K 13	178.181	2S22P3	2S 2P4	2D* 2D	22	
F 4	178.931	2P2	2P 4S	G 3P 3P	* 01	
K 13	179.484	2S22P3	2S 2P4	2D* 2D	33	
K 5	180.272	3S23P2	3S23P 5S	10 1F		2P*
NA 3	182.459	2P5	2P4 4D	G 2P* 2S		1D
CO 8	183.202	3D2	3D 4P	G 3F 3D		2D
CO 8	183.670	302	3D 4P	G 3F 3D		2D
NE 5	183.743	2S 2P3	2S 2P2 3S	3D* 3P		4P
F 6	183.743	2P2	2P 3S	1S 1P		2P*2 2D
8 00	183.547	302	3D 4P 3P 3D	G 3F 3C		20
CO14 SC 5	184.854	3P2 3P5	3P4 4D	1D 1F G 2P* 2C	* 23 22	1 D
SC 5	184.984 185.632	3P5	3P4 4D	G 2P* 2D	23	1D
CO 8	185.888	302	3D 4P	3P 1P		2D
<u>K 14</u>	185.918	2\$22P2	2S 2P3	G 3P 3P		
. NA 3	186.271	2P5	2P4 5D	G 2P* 2D	23	3P
SC _5	186.296	3P5	3P4 4D	G 2P* 2P	22	10
SC 5 SC 5	186.520	3P5	3P4 4D	G 2P* 2D	12	1D
	•	3P5 2S 2P2	3P4 4D 2S 2P 3S	G 2P* 2S 4P 4P	21	1D 3P*
E	186.860 187.796	3P5	3P4 4D	G 2P* 2P		1D.
SC 5	188.219	3P5	3P4 4D	G 2P* 2S		10
NA 4		2\$ 2P5	2S 2P4 3S	3P* 3C		20
	189.179	2P2	2P 3S	1S 1P		-
	189.755	2S 2P6	2S 2P5 3S	2S 2P	•	3P*
	189.776	3S23P5	3\$23P4 5\$	G 2P* 2D		10
	189.998	2.S. 2P6	2S 2P5 3S	2S 2P		-
	190.478	2P4	2P3 3S	G 3P 3D		20*
K 14	190.509	2522P2	2S 2P3	G 3P 3P		
SC 5	190.752	3P5	3P4 4D	G 2P* 2F		· 3P
CO14	190.839	3P2	3P 3D	G 3P 3C		
_ CO 8	190.969	302	3D 4P	3P 3C		2 D
CO8	191.441	3D2	3D 4P	3P 3D	* 01	20

		CONFIGU	DATION	TE	D M		PARENT	_TEDM
ION N	VAVELENGTH	LOWER	UPPER	LOWER	UPPER	11	LOWER	UPPER
	191.510	3D2	3D 4P	3P	3D*	11	CONCIN	20
	191.536	3P5	3P4 4D	G 2P*	4F	23		3P
	191.786	2S 2P3	2S 2P2 3D	3S*	3 P	12		4P
N 4	192.003	2S 2P	2S 70	3P*	3 C	23		77
	192.298	3P5	3P4 4D	G 2P*	2D	22		3P
	192.576	3P4	3P3 3D	G 3P	3P*	11		2P*
SC 5	192.617	3P5	3P4 4D	G 2P*	20	23		3P
\$ 10	192.717	2\$22P3	2S 2P4	2P*	2 F	11		38
NA 3	193-613	2P5	2P4 4D	G 2P*	4P	23		3P
SC 5	193.878	3P5	3P4 4D	G 2P*		12		-
		2P5	2P4 4D	T T	2D			3P
		-			2C	12		3P
. NA3		2P5	2P4 4D	G 2P*	2 P	11		3P
NA3		2P5	2P4 4D	G 2P*	4P	12		3P
K 14		2S22P2	2S 2P3	G 3P	3P*	22		
NE3		2P4	2P3 4D	G 3P	3D*	23		2P*
K14	196.222	2S22P2 .	2S 2P3	G 3P	3F*	21		
_	197.550	3P	3D.	G 2P*	20	12		
V5	199.943	3P6 3D	3P 5 3D 4S	G 2D	20*	22		30*
V 5	200.206	3P6 3D	3P53D 4S	G 2D	20*	32		3D*
F 5	200.232	2S 2P2	2S 2P 3S	2P	2 P#	22		1 P#
F 5	200.263	2S 2P2	2S 2P 3S	2P	2 P *	11		1P*
V 5	200.658	3P6 3D	3P53D 4S	G 2D	20*	23		3D*
V . 5	200.885	3P6 3D	3P53D 4S	G 2D	2 C *	33		3D*
NA 3	201.600	2P 5	2P4 3D	G 2P*	25	21		1:0
K 13	202.104	2S22P3	2S 2P4	2P*	20	23		
V 5	203.669	3P6 3D	3P53D 4S	G 2D	4D*	33		3D*
S6	203.792	3P	60	2P*	2 C	12		
P 10	203.869	2\$22P2	2S 2P3	G 3P	3 S*	01		
TI 6	203.890	3\$23P5	3S23P4 4S	G 2P*	4 P	12		3P
V 5	203.928	3P6 3D	3P53D 4S	G 2D	40*	34		3D*
0 5	203.946	2P2	2P 30	3P	3C*	22		2P*2
NE 3	204.037	2P4	2P3 4D	G 3P	3C*	23		2D*
S 6	204.331	3P	6D	2P*	2 D	23		
NE 3	204.427	2P4	2P3 4D	G 3P	3D*	12		2D*
NE 5	204.592	2S 2P3	2S 2P2 3S	1P*	10	12		2D
NE 3	205.126	2P4	2P3 4D	G 3P	3P*	22		20*
NE 3	205.328	2P4	2P3 4D	G 3P	3P*	12		20*
P 10	205.418	2S22P2	2S 2P3	G 3P	3 S*	11		
CO15	205.806	3P	3D	G 2P*	2 D	23		
	205.904	2S 2P	. 2S 5D	3P*	30	01		
N 4		3S23P3	3S23P2 3D	G 45*	4 P	21		3P
MN11	2 07. 069 2 07. 099	294	2P3 4D	10	1F*	23		2P*
NE 3			2S 2P3	10	19*	21		-,
P 10	207.377	2S22P2		G 2P*	2P	12		3 P
NA 3	207.860	2P5	2P4 4S		2 P 3 P #			2P*
NE 3	208.190	2P4	2P3 4S	G 3P		22		3F*
V 5	208.651	3P6 3D	3P530 4S	G 2D	2F*	23	1 0	15
CR 5	208.870	3P6 3D	3P6 4F	G 2D	2F*	23	15	3F*
V 5	208.956	3P6 3D	3P53D 4S	G 2D	2F*	33	10	
CR 6	209.211	3P6 3D	3P6 4F	G 2D	2F*	34	15	15
CA 7	209.780	3S23P2	3\$23P 4\$	1D	1P*	21		25+
V 5	210.217	3P6 3D	3P53D 4S	G 2D	2F*	34		3F*
NE 5	210.433	2S 2P3	2S22P 3P	3D*	3 P	21		
CO 7	211.732	3D3	3D2 4P	G 4F	40*	44		A3P
V 5	211.985	3P6 30	3P530 4S	G 2D	4F*	23		3F*
CO 7	212.219	3D3	302 4P	G 4F	4 C *	54		A3P

		CONFIGU	JRATION		TE	RM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	1	LOWER	UPPER	JJ	LOWER UPPER
V 5	212.344	3P6 3D	3P53D 4	S G	.2D	2P*	21	3P*
V 5	212.428	3P6 3D	3P53D 4	\$G	2D .	4F*	. 34	3F*
CO 7	212.519	303	3D2 4I	P G	4F	4D*	22.	A3P
CO 7	212.685	3D3	3,D2 41	P G	4F	4D*		A3P
CO16	212.763	3S 3P	3S 3D		3P*	3D	12	*** **** **** ****
CO 7	212.832	303	3D24	P G.	4F	4D*		A3P
NE 4	212.899	2P3	2P2 3	S	20.*	2.D		10
V 5	212.942	3P6 3D.	3P53D 4	S G.	.20	29*		3₽*
CO16	213.325	3S 3P	. 3S .3D		3P.*	30	11 .	
V 5	213.481	3P6 3D	3P53D 4	SG	2D	4P*		3P*
P 9	213.917	2S22P3	2S. 2P4		22*	2.P		
MN12	214.235	3\$23P2	3S23P 3		. 3P	30*		
NE 5	214.641	2S 2P3	2S22P 3		3D*	30		
MN12	215.246	3S23P2	. 3\$23P 3			30*	1.2	
NA 3	215.589	2P5	224 3	D . G	2P*	4D	. 23	<u> 3P _ c</u>
NA 3.	215.625	2P5	224 3	D G	2P*	4P	21	
NE 3	215.651	2P4	2P3 4	D	1D .	1F*		2D*
NE 3	215.682	2P4	2P3 4	D	10	10*		2D*
NA 4	215.809	2S 2P5	25 2P4 3	S	3P*	3 P		<u>4P</u>
NE 3	215.944	2P4	293, 4	D	1D	19*		2D*
NA 3	216.065	2P5	2P4 3	D G		40		3P
CO 7	216.213	303	302 4	Ρ	2.G	2H*	56	AIG
NE 3	217.726	2P4	. 2P3. 3	D. G.	3P	3D*		2₽*
NE 3	217.990	. 2P4	2P3 3	DG.	.3P	3D*		2P*
MN12	218.028	3S23P2	3\$23P 3	D G.	3P	3D*		and Vallet passes a sea commence and an arrange
NE 3	218.469	2P4	2P3 4	S G	3P.	3D*		20*
NE 3	218.743	2P4	2P3 3	D G	3.P	3P*	12	2P*
MN12	218.828	3\$23P2	3S23P 3	D , , G	3P	3D*	22	The state of the s
CO 7	219.190	303	30,2,4	P	4P	4P*		A3P
CO 7	219.638	3D3	3D2 4		4P	4P*	33	A3P
CO 7	219.734	3D3	3D2_4	P G	.4F	20*		A3F
F 4	219.743	2P2	2P3		_10	1P*		and the total program is a program to the
NE 3.	219.908	2P4	2P3 4	S	.10	1P*		2P*
CO16	219.913	3S 3P	3S 3D		3P*	3D	23	* - ***********************************
CO 7	219.920		3D2 4		4P	<u>4₽* .</u>	22	A3P
CO 7	220.176	3D3,	3D2 4		_4F	20*	43	A3F
CO 7.	220.389	3D3	3D2 4	P.,	. 4P	4 <u>P</u> *	32	<u>A3P</u>
CO 7	220.399	3D3	3D2 4	P	2H	2H*	66	AlG
F 3	220.538	2P3	2P2 5	S G	4S*	4 P	23	, 3P
CO 7	220.971	3D3	3D2 4	P G	4F	40*	54	A3F
NE 4	220.980	2P3	2P2 3	S	20*	2 P	22	3P
CO 7	221.218	3D3	3D2. 4	PG	4F	4D*	43	A3F
CO 7	221.334	3D3	302 4	Р	4 P	4D*	34	A3P
CO 7	221.497	3D3	302 4	P G	4F .	4C*	32	A3F
K 7	221.583	3S 3P2	3S 3P 4	S	4P	4P*	22	3P*.
CO 7	221.923	303	302 4		4 P	4D*	23 .	A3P
CO 7	222.150	3D3	3D2 41	P G	4F	4F*	45	A3F
CO 7	222.183	3D3	3D2 4	P G	4F	2F*	54	A3F
CO 7	222.255	303	3D2 4	P G	4F	2F*	43	A3F
CO 7	222.322	3D3	3D2 4		4F	4G*	56	A3F
CO 7	222.404	3D3	3D2 4		4P	4C*	12	A3P
CO 7	222.422	3D3	3D2 4		4F	4F*	34	A3F
CO 7	222.688	3D3	302 4		4F	4F*	55	A3F
CO 7.	222.863	303	302 4	P G	4F	4F*	44	A3F
CO 7	223.005	3D3	302 4		4F	4G*	45	A3F
F 3	223.026	2P3	2P2 4		4 S*	4 D	21	3P

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TON	UAVELENCTO	CONFIGU			RM	· · · · · · · · ·		TERM
ION	WAVELENGTH	LOWER	UPPE <u>R</u>	LOWER	UPPER	11	LOWER	UPPER
CD 7	223.113	3D3	3D2 4P	G 4F	4F*	33		A3F
NE 3 CO 7	223.242 223.314	2P 4	2P3 4D	G 3P	3D* 4F*	01 22		4S*
CO 7	223.521	303 303	3D2 4P 3D2 4P	G 4F G 4F	46+	22 34		A3F A3F
CO 7	223.574	303 303	3D2 4P 3D2 4P	G 4F	4F*	43		A3F
CA 5	223.639	3S23P4	3S23P3 4D	G 3P	30*	23		4S*
CO 7	223.672	303	3D2 4P	G 4F	4F#	. 32		A3F
N 4	223.711	2S 2P	2S 6D	1P*	10	12		~3.
V 6	224.001	3P6	395 30	15	10#	01		2P*
CO 7	224.005	3D3	3D2 4P	G 4F	4 G *	23		A3F
V 5	224.309	3P6 3D	3P53D2	G 2D	2D*	23		
F 3	224.368	2P3	2P2 4D	G 45*	4D	23		3P
V 🙎	224.457	3P6 3D	3P53D2	G 2D	20*	32		
V 8	224.534	3P4	3P3 3D	G 3P	1 C*	12		2P*
CO 7	224.845	303	3D2 4P	4P	45*	12		A3P
CO 7	225.176	303	3D2 4P	2H	2G*	54		AlG
K 5	225.221	3\$23P3	3S23P2 4D	G 4S*	4 P	22		3 P
CA 5	225.315	3S23P4	3S23P3 4D	G 3P	30*	12		45*
K 5	225.376	3S23P3	3523P2 4D	G 45*	4P	23		3 P
K., 5	225.537	3\$23P3	3\$23P2 4D	G 4S*	4 P	21		3P
CA 5	226.123	3\$23P4	3S23P3 4D	G 3P	3D*	01		4S*
P 9	226.970	2S22P3	2S 2P4	2P*	25	11		
SI 9	227.376	2S22P2	2S 2P3	10	1P*	21		224
NE.3	227.381	2P4	2P3 3D	G 3P	3₽# .	21		20*
.O .S P 9	227 . 565 227 . 605	2P2 2S22P3	2P 3 S 2S 2P 4	3P 2P#	3P* 2S	11 21		2P*2
0 \$	227.643	2522F3	25 2P4 2P 3S	3P	23 3P*	10		2P*2
NE 3	227.693	2P4	2P3 3D	G 3P	3P*	11		20*
NE 3	227.765	2P4	2P3 3D	G 3P	3P*	10	•	2D*
NE. 3	228.304	2P4	. 2P3 3D	G 3P	3 S*	01		. 2D*
TI 5	229.155	3P6	3P5 4S	G 1S	22*K	01		2P*
CO 7	229.254	3D3	3D2 4P	2 G	2G*	55		A3F
NE.3	229.381	2P4	2P3 3D	G 3P	3 C*	01		2D*
CO 7	229.516	303	3D2 4P	2G	2G*	44		A3F
. P 5	229.526	3 \$, 6P	G 2S	2P* .	11		
V . 8.	229.595	3P4	3P3 3D	18	1P*	01		2P*
CO _7	230.008	303	3D2 4P	2G	2G*	54		A3F
.NE 3	230.268	2P4	2P3 3D	1D	1F*	23		2P#
NE 5	230.521	2S 2P3	2S22P 3P	3P*	3 C	23		
. K. 8	230.733	3 S. 3D.	3S 4F	3.0	3F*	12	25	25
NE 3. K8	230.768 230.774	2P4 .	2P3 3D	1D	1P*	21	20	2P*
CO. 7	230.898	3S 3D 3D3	3S 4F 3D2 4P	3 D 4 P	3F* 4D*	23 34	2.8	2S A3F
NE 5	230.921	2S 2P3	2S22P 3P	3P*	3 C	12		ASE
CR11		3S23P2	3S23P 3D	G 3P	3C*	01		
CO7	231.190	303	3D2 4P	2G	20*	43		A3F
CO 7	231.272	303	3D2 4P	4P	4D*	23		A3F
NE 3	231.302	2P4	2P3 30	10	10*	22		2P*
CO 7	231.758	303	3D2 4P	4P	40*	33		A3F
K 5	231.825	3523P3	3S23P2 4D	2D*	2 D	33		3 P
CO 7	231.929	30.3	302 4P	4P	4C*	12		A3F
.C.O7	231.983	3,D3,	3D2 4P	2G	40*	54		A3F
CO 7	232.072	303	3D2 4P	4P	4D*	22		A3F
CR11.	232.244	3S23P2	3S23P 3D	G 3P	30*	12		*
C.O .7	232.333	303	3D2 4P	2G	40*	43		A3F

		CONFIGU	ID ATTON	TE	RM	,	PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER
N 4	232.444	2S 2P	25 45	3P*	35	21	
CO 7	233.298	303	3D2 4P	2G	2F*	54	A3F
CO 7	233.484	303	3D2 4P	2G	2F*	43	A3F
CO 7	233.644	3D3	. 3D2 4P	2H	2G*	55	A3F
CO 7	233.968	303	3D2 4P	2H	2G*	65	A3F
CR11	234.263	3\$23P2	3S23P 3D	G 3P 2H	3D*	11	A3F
CO 7 CO17	234•415 235•110	. 3D3 3P	3D2 4P 3D	2⊓ 2P≉	2G* 2D	54 12	АЭГ
CR11	235.734	3\$23P2	3 S 2 3 P 3 D	G 3P	3D*	22	
N 4	235.799	2S 2P	2S 50	1P*	10	12	
CO 7	236.101	303	3D2 4P	20	20*	33	A3F
CO15	236.299	3\$23P	3S 3P2	G 2P*	2 P	12	
P 10	236.655	2\$22P2	2S 2P3	18	1 P *	01	
V 8	237.589	3P4	3P3 3D	G 3P	1P*	21	2D*
CO 7	237.757	303	3D2 4P	2D	2F*	34	A3F
AR 5	238.327	3\$23P2	3\$23P 5\$	1D	1P*	21	2P* 3P
K 5 F 4	238•489 238•670	3\$23P3 2\$ 2P3	3S23P2 4D 2S 2P2 3D	20* 3P*	2 F 3 C	34 12	4P
K 5	239.340	3\$23P3	2S 2P2 3D 3S23P2 4D	20*	2 F	23	3P
CL14	239.399	252	2S 2P	GIS	1P*	01	,
CO15	240.192	3\$23P	3S 3P2	G 2P*	2 P	11	
AL 7	240.517	2\$22P3	2S 2P4	2D*	2 P	22	
NE 4	240.782	2\$ 2P4	2S 2P3 3S	20	2D*	33	3D *
FE 7	243.278	3D2	3D 4P	3P	3F*	23	2D
V 8	243.976	3P4	3P3 30	G 3P	3 F *	11	2P*
N 4 V 9	244•350 245•059	2P2	2P 4D 3S23P2 3D	1D G 4S*	1F* 4P	23 22	2P*2 3P
AL 8	247.366	3\$23P3 2\$22P2	3S23P2 3D 2S 2P3	G 4S* G 3P	3S*	01	عبد
CO 6	247.515	3D4	3D3 4P	3F	3G*	23	· A2F
v 9	247.694	3S23P3	3S23P2 3D	G 4S*	4 P	23	3 P
AL 8	248.448	2\$22P2	25 2P3	G 3P	3\$*	11	
ρġ	250.786	2\$22P3	2S 2P4	20*	2 D	33	
SI 8	250 . 994	2\$22P3	2S 2P4	2P*	25	21	
F 3	252.355	2\$ 2P4	2S 2P3 3D	4 P	4S*	32	30*
F 3	253.102	2S 2P4	2S 2P3 3D	4P	40*	23	3D*
F 3 TI 4	253.438	2S 2P4	2S 2P3 30	∵ 4P G 2D	4D*	12 23	30*
11 4	254.198	3P6 3D	3P53D2		20*		
TI 4	254.404	3P6 3D	3P53D 4S	G 2D	20*	. 22	3D*
TI 4	254.429	3P6 3D	3P53D2	G 2D	20*	32	30*
F 3 F 3	254•458 254•623	2\$ 2P4 2\$ 2P4	2S 2P3 3D 2S 2P3 3D	4P	4P* 4P*	32 33	3D*
TI 4	254.692	3P6 3D	3P53D 4S	G 2D	2D*	32	3D*
F 3	254.872	2S 2P4	2S 2P3 3D	4P	49*	21	3D*
CO 6	255.806	304	303 AP	3H	3G*	65	A2F
CO 6	255.936	3D4	3D3 4P	3H	3G*	54	A2F
F 3	255.971	2P3	2P2 3D	G_4\$*	<u>40</u>	21	<u>3P</u>
CO 6	256.085	304 -	3D3 4P	3 <u>H</u>	3 <u>G</u> *	43	A2F
V 10	256.226	3\$23P2	3S23P 3D	G 3P	3 P#	01	2P*
V 8 TI 4	256+638 257-284	3P4 3P6 3D	3P3 3D	G 2D	3P* 2C*	21 23	2P* 3D*
11 4 TI 4	257•284 257•430	3P6 3D	3P53D 4S . 3P53D 4S	G 2D	20+	33	30*
\$ 13	257.845	252	2S 2P	G 1S	1P*	01	The second secon
TI 4	259.332	3P6 3D	3P53D 4S	G 2D	40*	33	30*
TI 4	259.522	3P6 3D	3P53D 4S	G 2D	40*	34	3D*
NE 3	260.861	2P4	2P3 30	18	1P*	01	2D*
CL12	262.305	2S22P2	.2S 2P3	G 3P	30*	12	

		CONFIC	URATION	TS	RM .		PARENT	T-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER		INVER	UPPER
P 10	263.261	2 S 2 2 P 2	2S · 2P3	G 3P	3P#	Λ1		. addaddii
F 3	263.287	2P3	2P2 30		2 F	23		10
0 3	263.594	2P2	2P 40		3P*	10	-	. 10
0 3	263.627	2P2	2P 40		3P*	. 11		
0 3	263.765	2P2	2P 40		3P#	21		to the same ways are seen to the
V 12	264.592	3S 3P	3\$ 30		3.0	Öi	2.5	2S
TI 4	264.625	3P6 3D	3P53D 49		4P*	32		3P*
TI 4	264.647	3P6 3D	3P53D 43		2P*	21		3P*
P 10	265.454	2S22P2	2S 2P3	G 3P	3P*	11		
CO 6	265.481	304	3D3 4F		5P#	23		A4P
P 10	265.661	2S22P2	2S 2P3	G 3P	3P*	12	***	10.4.t
v 11	265.767	3S2 3P	3\$2 30		20		15	15
CO 6	265.839	304	3D3 4F		5P*	33		A4P
CO 6	265.976	3D4	3D3 4F		5P#	12		A4P
V 12	266.127	3S 3P	3\$ 35		30	12	25	25
CO 6	266.250	3D4	3D3 4F	· · · · · · · ·	5 Ρ≄			
CO 6	266.316	304	3D3 4F		5 P *			A4P
K 6	266.430	3S23P2	3\$23P 4\$		1P*			
CO 6	266.469	304	3D3 4F		5 P *	. 11		A4P
TI 4	266.577	3P6 3D	3P53D 49	_	2F.*	23 .		3 <u>F</u> *
CO 6	266.629	3D4	3D3 4F		5 P.*	32		A4P
CO 6	266.739	304	3D3 4F		5P*	21		A4P
TI 4	267.039	3P6 3D	3P53D 49	_	2F*	33		3F*
N 3	268.239	2S 2P2	2P2 3F		45*	22		3P
N 3	268.333	2S 2P2	2P2 3F		4.S*	32		3P
TI 4	268.361	3P6 3D	3P53D 49		2F*.	. 34 .		3F.*
CL12	268.425	2S22P2	2S 2P3	G 3P	30*	23.	* *	204
TI 4	268.932	3P6 3D	3P53D 49		2P*	22		3P*
V 8	268.977	3P4	3P3 30		1F*	23		2D*
FE14	269.034	3\$23P	3S 3P2	G 2P*	20	22		
P 10	269.577	2S22P2	2S 2P3	G 3P	3P*	21		204
NA 2	270.052	2P6	2P5 60		12*K	01		2 P*
TI: 4	270.113	3P6 3D	3P53D 49		4F*	34	20	3F*
V 12	270.451	3S 3P	3\$ 30		30	23	2\$	25
N 4	270.926	2S 2P	2P 31	_ ,	1 D	12		2P*2
CO 6	270.950	304	3D3 4F		3G*	43		A2H
NA 2	271.059	2P6	2P5 61		22*K	01		2P*
C016	271.113	3S 3P	3P2	3P*	3 P	12	2\$	254
TI 4	271.197	3P6 3D	3P530 49		4F*	23		3F*
V 9	271.198	3S23P3	3\$23P2 30		2 P	21		3P
CO 6	271.353	3D4	3D3 4F		3G*	54	2.0	AZH
V 12	271.475	3S 3P	35 30		3D	22	2\$	25
CO 6	271.522	304	3D3 4F		3G*	55 (5		A2H .
CO 6	271.798	304	303 4		3G*	65		AZH
V 11	272.084	3S2 3P	3\$2 30	G 2P*	2 C	23	18	15
V 11	272.655	3\$2 3P	3 \$ 2 3 (. 20	22	15	15
NA 2	273.445	2P6	2P5 50		1·2*K	01		2P*
N 3	275.013	2S 2P2	2P2 3F		4D*	34		3P
6 03	275.121	304	3D3 4F		36*	33		A2H
N4 2	275.448	296	2P5 50		22*K	01		2P*
V 9	275.510	3S23P3	3\$23P2 30		2 P.	22		3.2
CO 6	275.558	3D4	3D3 4F		3G*	44		A2H
CO 6	275.696	3D4	3D3 4F		3G*	45 56		A2H
CO 6	275.596	304	3D3 4F		3 G*	55 22		A2H
N 3	276.292	2S 2P2	2P2 3F	4 P	4 P *	33		3P

-		¢ O	NE 1 C	ID ATTON				E D M		04054	T_TERM
ION	WAVELENGTH.	LOWE		JRATION Uppei	R		.OWER	ERM Upper	IJ	LOWER	T-TERM UPPER
CO 6	276.387	3D4		3D3			5D	3D#	23	LUNEN	AAF
v 9	276.612	3S23P3		3S23P2			20*	2 P	32		3P
CO 6	276.883	3D4		303		G	5 D	3D*	12		A4F
SI 8	277.140	2\$22P3		2S 2P4			20*	20	33		
CO 6	277.467	304		303	4P	G	50	5F*	34		A4F
CD 6	277.475	304		3D3	4P	G	5 D	5.F.*	45		A4F
. SC 6	277-657	3P4		3P3	3D	G	3P	10*	12		2 P*
.CO 6	278.053	3D4		303	4P	G	50	5F≠	33		A4F
.CD 6	278-482	304		303	4P	G	50	5 F *	11		A4F
CO 6	278.565	304		303	4P	G	5D	5F*	43		A4F
. CO 6	278.670	304		303	4P		5D	5F*	32		A4F
co . 6 .	278.744	. 304		303		G	5D	5D*	34		A4F
. CO .6	278 <u>-765</u> .	304		303	-	G	5D	5D*	23		A4F
6 00	278.798	304		303	-	G	50	5F*	21		A4F
CD 6.	279.269	3D4		303	4P	G	5D	50*	44		A4F
CO 6	279.465	3D4		303		G	5D	5D*	33		A4F A4F
CO 6	279.605	304		3D3 3D3	4P 4P	G G	50 50	50*	01 43		A4F
	279 <u>.990</u> 280 <u>.</u> 048	304 304		303		-	50	50* - 50*	32		A4F
CD 6	280.142	. 204	3P	303	6 D	G	2P*	2C	12		HTF.
TI 9	280.450	3S23P2	31	3523P	3D	Ġ	3P	3 P *	01		2P*
AL 9	280.470	2S2	2P	2S 2P2	70	_	2P*	2 P	12		21.4
P S	280.782	£32	3P	23 2.2	6D	•	2P#	2D	23		
NA 2	281.285	2P6	٥,	2P 5		G	15	12*K	01		2P#
NA 2	282.058	226		2P5			15	22*K	οī		2P*
CO 6	282.292	304		3D3		_	3H	3G*	65		AZG
CD 6	282.587	3D4		303	4P		3H	3G*	54		A2G
AL 9	282.673	2\$2	2P	2S 2P2		G	2P*	2 P	11		
V 12	282.792	3\$	3 P	3S 3D			3P*	3 C	12		
K 6	282.856	3\$23P2		3S23P	45		15	1P*	01		2P*
CD 6	283 . 068	304		3D3	4P		3H	3G*	43		A2G
V. 12	283.175	3 S	3 P	35 30			3P*	30	11		
CO 6	283.541	3D4		303	4P		3F	3 G *	45		A 2 G
.AL 7	283-545	2\$ 2P4		2P5		_	2D	2P*	21	• •	
V 5	283-977	3P6.	30	3P6	-	G	20	2F*	23	18	15
CO. 6	284.034	304	30	3D3	-	_	3F	3G*	34	1.0	AZG
V5	284.372	3P6	30	3P6	4F	G	20	2F*	34	15	18
NA 3	284.523	2S 2P6		2S 2P5	35		25	2P*	11	•	3P*
CO 6	284.797	3D4		303			3F	3G*	23		A2G
. NA 3	284.814	2S 2P6		2S 2P5	35	_	25	2P*	12		•
S 11 . AL 8	285.626	2\$22P2		2S 2P3 2P4		G	3P	3C* 3P	12		
CO16	286.072	.2\$ 2P3 3\$	3.0	3P2			3D* 3P*	3P	10 22	25	
AL 7	286.368 286.472	2\$ 2P4	3P	2P5			20	3P 2P#	32	23	
AL 9	286.505	2\$2.	2P	2S 2P2		G	2P#	2P	21		
CO 6	286.809	3D4	2.	303	40	G	3G	3G*	55		A2G
CA 5	287.060	3P4	•	3P3		G	3 P	35*	ĩĩ		45*
AL 8	287.080	2S 2P3		2P4	. •	_	3D*	3 P	21		
CO 6	287.161	3D4		303	4P	•	3G	3G*	44		A2G
AL 8	287.627	2\$22P2		2S 2P3			15	1.8*	01		
CO 6	287.647	.304		303	4P		3 G	3G*	33	•	A 2G
K 4	287.849	3\$23P4		3S23P3	4 D	G	3P	3€*	23		4S*
CO16	287.851	3 S	3 P	3P2			3P*	3 P	11	25	
CO 6	288.052	3D4		3D3	4P		3G	3G*	43		A2G
V 12	288.239	3\$	3 P	3S 30			3P*	30	23		
CA 5	288 • 255	3\$23P4		3S23P3	45	G	3P	3 S *	11		4 S*

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		CONFIGU			RM		PARENT	
ION	WAVELENGTH.	LOWER	UPPER	LOWER	UPPER	11	LOWER	UPPER
AL 8	289.423	2S 2P3	2P4	3D*	3 P	32		
AL 8	289.544	2S 2P3	2P4	3D*	3 P	22		464
K 4	289.561	3S23P4	3S23P3 40	G 3P	30*	12		45*
T110	289.720	3S2 3P	3S2 3D	G 2P*	20	12	15	15
K 4	290.335	3S23P4	3S23P3 4D	G 3P	3C*	01		4S*
S 11	291.424	,2S22P2	2S 2P3	G 3P	30*	23		. 204
SC 6	292.122	3P4	3P3 3D	G 3P	1 F *	21		2D* 4S*
CA 5	293.169	3S23P4	3S23P3 4S	G 3P	5 S *	22		45* 44F
CO 6	294.378	304	3D3 4P	3F	3F*	34		A4F
CO 6	294.520	304	3D3 4P	3F G 2P*	3F* 2S	44 11		A+r
MN13	294.544	3\$23P	3S 3P2	2P*	2 S	11		
P 5	294.732	3P	6S 3S23P2 4D		23 4F	22		3 P
AR 4	294.913	3S23P3 3S23P3	3S23P2 4D 3S23P2 4D	G 4S* G 4S*	4P	21		3P
AR 4	295.022		3\$23P2 4D	G 45*	4P	23		3P
AR 4	295.165	3 S 2 3 P 3 3 D 4	3D3 4P	3F	3F*	43		A4F
CO 6 SC 8	295• 326 295• 432	3\$23P2	3S23P 30	G 3P	3D *	21		M 71
T11D	295.677	3S2 3P	3\$2 3D	G 2P*	20	23	15	15
							13	tarrene a con-
CD 6	295.810	304	3D3 4P	3F	3E*	. 22.		A4F
CO 6	295.88C	3 D4	3D3 4P	3 F	3F*	32		A4F
TIII	295.992	3S 3P	3 S 3 D	3P*	3 D	01	25	<u>2S</u>
CO 6	296.005	304	3D3 4P	3H	3G*	65		A4F
CO 6	296.072	304	3D3 4P	3H	3G* _	44		A4F
TIIO	296.148	3\$2 3P	3\$2 <u>3</u> D	G 2.P.*	20	22	1.5	15
CO 6	296.444	304	3D3 4P	3H	3G*	54		A4F
CO 6	296.719	3D4	3D3 4P	3H	3.C.*	43		A4F
NE 2	296.944	2P5	2P4 3D	G 2P*	20	23		15
SC 6	296.949	3P4	3P3 3D	G 3P	3P*	11		2P*
V 10	297.036	3\$23P2	3\$ 3P3	G 3P 3F	3G*	. 11		445
CO 6	297.367	3D4 3S23P3	3D3 4P 3S23P2 3D			45		A4F 3P
TI 8 NE 2	29 7.4 53 29 7.5 86	2P 5	2P4 3D	2D*	2.P 2.D	21		15
NE Z	297.591	2S 2P2	2P4 3D 2P2 3P	G 2₽.★ 2D.	2F*	34		10 °
T111	297.698	3\$ 3P	3S 3D	2 U 3 P≠	30	12	25	2.5
CO 6	297•723	3D4	303 4P	3G	3F*	44	2.3	A4F
CO 6	298.024	30 4	3D3 4P	3F	3G*	34		A4F
CO 6	298.052	3D 4	. 3D3 4P	3G	3F*	54	-	A4F
SC 5	298.166	3P4	3P3 3D	G 3P	3P*	12		2P*
CO 6	298.529	304	3D3 4P	3G	3F*	43	*****	A4F
CO 6	298.600	3D4	3D3 4P	3F.	3G*	23		A4F
CO 6	298.871	3D4	3D3 4P	3 G	3F*	32		A4F
CO 6	299.559	3D4	3D3 4P	3 P	3C*	01		A4F
NA 2	300.098	2P6	2P5 4S	G IS	11*K	01		2P*
CO 6	300.207	304	303 4P	3 P	3D*	12		A4F
CO 6	300.687	3D4	303 4P	3 P	3D*	īī		A4F
AL 9	300.781	2S2 2P	2S 2P2	G 2P*	25	11		
CO 6	300.974	304	3D3 4P	3G	3G*	55		A4F
NA 2	300.986	2P6	2P5 3D	G IS	12*K	01	•	2P*
CO 6	301.116	304	3D3 4P	3P	3D*	23		A4F
NA 2	301.216	2P6	2P5 4S	G 15	22*K	01		2P*
CO 6	301.304	3D4	3D3 4P	3F	3D*	33		A4F
CO 6	301.435	3D4	3D3 4P	3F	3D*	43		A4F
CO 6	301.474	3D4	3D3 4P	3G.	3 G*	44		A4F
T1 8	301.500	3S23P3	3S23P2 3D	20*	2P	22		3P
V 10	301.693	3\$23P2	3S 3P3	G 3P	1P*	21		
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•		CONFIC	,				DARCHT	
TON	MAVE: ENCTU	CONFIGU			RM.		PARENT	
ION Ca 3	WAVELENGTH 301.790	LOWER 3P6	UPPER 3P5 5S	LOWER G 1S	UPPER 11*K	JJ 01	LOWER	UPPER 2P*
NA 2	301.912	2P6	2P5 3D	G 15	21*K	01		2P*
CO 6	302.042	304	303 4P	39	3C*	22		A4F
T111	302.093	3 S 3 P	3S 3D	3P#	3D	23	25	2 \$
CO 6	302.134	304	3D3 4P	3F	30*	22		A4E
CO 6	302.199	3D4	3D3 4P	3F	3D*	32		A4F
CO 6	302.413	3D4	3D3 4P	3 P	50*	01		A4F
T1 8	302.429	3S23P3	3\$23P2 3D	20*	2 P	32		3 P
SC 7	302-500	3S23P3	3\$23P2 3D	20*	20	22		.10
CO 6	302.652	304	3D3 4P	3F	30*	21		A4F
SC 3	302.663	3P6 3D	3P53D2	. G 2D	20*	22	15	
T111	302.884	3S 3P	3 S 3D	3 ₽ ≉	3 D	22	25	25
SC 7	303.098	3\$23P3	3S23P2 3D	2D*	20	32		10
CO 6	303.122	3D4	3D3 4P	3P	5D*	12		A4F
SC 3	303.438	3P6 30 ·	3P53D2	G 2D	2C*	33	18	
CO 6	303.492	3D4	3D3 4P	3F	5F.*	32		A4F
NE 2	303.666	2P5	2P4 4D	G 2P*	2 P	22		10
CO 6	304.258	3D4	3D3 4P	3 P.	5D*	23		A4F
CA 3	304.333	3P6	3P5 5S	G 15	22*K	01		2P*
NE 2	304.415	2P5	2P4 4D	G 2P*	20	23		10
CO 6	304.539	3D 4	3D3 4P	3F	50*	43	*	A4F
CO 6	305.101	304	3D3 4P	3F	50*	32		A4F
AL 9	305.163	2S2 2P	2S 2P2	G 2P*	2 S	21		445
CO 6	305.526	3D4	3D3 4P	3F	5D*	21		A4F 3P*
N 3 SC 3	305.766	2S 2P2 3P6 3D	2S 2P 4D 3P53D2	4P G 2D	4D* 2F*	12 34	15	384
	305.907 306.429	3P6 3D 3S23P3	3S23P2 4D	3 2D*	20	33	. 13	3 P
AR 4 NE 2		2P5	2P4 4D	G 2P*	2 P	11	•	10
NE 2 TI11	306.492 306.907	3S 3P	3S 3D	3P*	30	12	•	10
SC 3	307.027	3P6 3D	3P53D2	G 2D	2F*	23	15	
7111	307.336	3S 3P	35 3D	3P*	3D	11	23	
AL 9	307.361	2S 2P2	2P3	20	2P*	32		
AL 9	307.440	2S 2P2	2P3	20	2 P#	21		
F 4	307.485	2S 2P3	2S 2P2 3S	19*	10	12		20
SC 7	308.353	3S23P3	3523P2 3D	2P*	2 P	12		10
SC 7	309.181	3S23P3	3\$23P2 3D	2P*	2 P	22		10
MN13	309.329	3S23P	35 3P2	G 2P*	2\$	21		
			3S 3P3	Ġ 3P	3S*			
V 10 TI11	309.467 312.206	3\$23P2 3\$ 3P	3\$ 3P3 3\$ 3D	G 3P 3P*	30*	01 23		
CO17	312.576		33 30 3P	G 2S	2P*	12		
AR 4	313.399	3S 3S23P3	3S23P2 4D	20*	2F	34		3 P
V 13	313.402	3P	30	2P*	20	12		٠,٠
AR 4	314.523	3\$23P3	3S23P2 4D	2D*	2 F	23		3P
MN 6	315.651	3D2	3D 4P	10	1F*	23		20
AL 9		2S 2P2	2P3	4P	45*	12		20
coli	317.385		35 386	G 2P*	25	21		
CR12		3\$23P	3S 3P2	G 2P*	25	11		-
CO 6	318.423		3D3 4P	3F	3F*	23	•	A4F
CO 6	318.486		3D3 4P	3F	3F*	33		A4F
AL 9	318.914	2S 2P2	2P3	4P.	45*	22		
S 5	319.604	3S 3P	3S 4D	3P*	3 D	01		
MG 6	320.132		2P5	2D	2P*	21		
NE 2	320.193	. 2P5	2P4 5D	G 2P*	20	23		3P
MG 7	320.384	2S 2P3	2P4	3D*	3 P	10		
MG 7	320.693	2S22P2	2S 2P3	15	1P*	01		
MG 7	321.244	. 2S 2P3	2P4	3D*	.3₽	21		
			•					

		CONFIGL	IR AT TON	TEI	R M		PARENT	TEDM
ION	WAVELENGTH	LOWER	UPPER	LOWER		JJ	LOWER	UPPER
MG 6	322.710	2S 2P4	2P5	20	2P*	32	EUNEN	OFFER
MG 7	323,244	25 2P3	2P4	3D*	3 F	32		
MG 7	323.370	2S 2P3	2P4	3D*	3 P	22		
NE 2	324.120	2P5	2P4 30	G 2P*	20	22		10
F 2	324.629	. 2P4	2P3 4D	G 3P	3D*	23		2P#
TI 9	324.841	3523P2	3S 3P3	G 3P	1P#	11		254
CA 4	325.704	3S23P5	3\$23P4 3D	G 2P*	20	22		10
vii	326.365	352 3P	3\$ 3P2	G 2P*	2 P	11	15	10
CO 6	327.394	3D4	3D3 4P	3F	5F*		13	445
NE 2	327.739	2P 5		G 2P*	2F	43		A4F
NE 2	327.784	2P5	2P4 30 2P4 3D	G 2P*		21		10
5 6	328.936	30	274 30 5F	20	2P	12		10
S 6					2F*	23		
CA 4	328 . 981 329 . 062	3D	5F	2D	2F*	34		••
TI 9		3S23P5	3\$23P4 3D	G 2P*.	20	12		10
	329, 283	3S23P2	3S 3P3	G 3P	1F*	21		
MN13	330, 926	3S23P	3S 3P2	G 2P*	20	22		
NE 2	330.932	2P.5	2P4 4D	G 2P*	4 P	12		3P
V 11	331.105	3S2 3P	3\$ 3P2	G 2P*	2 P	22	15	
NE 2	331.108	2P5	2P4 4D	G 2P*	2 P	21		3P
AL 8	331.423	2S 2P3	2P4	3P*	3 P	21		
CR12	332.352	3S23P .	3S 3P2	G 2P*	2 S	21		
NA 5	332.362	2S22P3	2S 2P4	2P*	2 P	21		
NA 5	333.622	2 S 2 2 P 3	2S 2P4	2P*	2 P	- 12		
MN10	334.682	3S23P4	3S 3P5	10	LP*	21		•
AL 8	334.709	2S 2P3	2P4	3P*	3 P	22		
F 7	335.114	3\$	4P	2 \$	2P*	12		
F 7	335.233	3\$	4P	25	2P*	11		
P 12	335.308	2S 2P	2P2	3P*	3P	22		
ŤI 9	335.974	3S23P2	3S 3P3	G 3P	3 S *	01		
V 11	336.848	3S2 3P	3S 3P2	G 2P*	2 P	21	15	
В 3	337.254	25	10P	G 2S	2P*	12		
CO11	338.102	3\$23P5	3S 3P6	G 2P*	25	11		
CA 4	338.580	3\$23P5	3S23P4 4S	G 2P*	2 P	12		3 P
C017	339.469	35	3P	G 2S	2P*	11		
CO13	339.537	3 S23P3	3S 3P4	G 4S*	4 P	23	•	
B 3	339.664	25	9P	G 2S	2P#	12		
TI 12	340.972	3P	30	2P*	20	12		
SI 9	341.905	2S22P2	2S 2P3	G 3P	3D*	01		
MG 8	341.927	2S 2P2	25 2F3 2P3	20	2P*	32		
MG 8	342.071	2S 2P2	2P3	2D	2P*	21		
F 2	342.423	2P4	2P3 4D	G 3P	30*	23		20*
K 4	342.790	3P4	3P3 4S	G 3P	3P#	11		2P*
K 4	343.568	3P4	3P3 4S	G 3P	3P*	01		2P*
B 3	343.735	28	3F3 4 3 8P	G 2S	2P#	12		214
MG 6	348.962	2S22P3	2S 2P4	2D*				•
_					2C	22		
	349.505	25	7P	G 2S	2P*	12		20+
K 4	351.226	3S23P4	3\$23P3 4\$	G 3P	3P*	11		2P*
N 3 F 2	351.637	25 2P2	25 2P 3D	20	2F*	34		1P*
	351 . 993	2P4	2P3 3D	G 3P	30*	12		2P*
K 4	352.069	3S23P4	3\$23P3 4\$	G 3P	3P*	01		2P*
F 2	352.264	2P4	2P3 3D	G 3P	30*	23		2P*
FE 5	352.586	304	3D3 4P	3H	3G*	65		A2F
MG 8	352.602	2S 2P2	2P3	4P	45*	12		
FE 5	352.764	304	3D3 4P	3H	3G*	54		A2F
FE 5	352.938	3D4	303 4P	3H	3G*	43		A2F

		CONF IG	JRATION	TE	RM ,		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER UPPER
F 2	353.212	294	2P3 4D	G 3P	3P*	22	2D*
F 2	353.277	2 P 4	2P3 4D	G 3P	3P*	12	2D*
MG 8	354.014	2S 2P2	2P3	4P	45*	. 22	
SC 7	354.171	3S23P3	3S23P2 3D	2P#	2P	21	3P
	354.850	2P4	2P3 30	G 3P	3₽*	12	2P*
F 2			3S 3P3	G 3P	1.9*	01	CET
SC 8	355.842	3S23P2 3S2 3P	35 3P2	G 2P*	2P	11	18
TI10	355.923		•			23	3P
NE 2	355.961	2P5	2P4 3D		4D 1P*		
V 12	356.301	352	3S 3P	G 15		.01	2S.
F 2	356.598	2P4	2P3 4D	10	1F*	23	2P*
NE 2	356.690	2P5	2P4 3D	G 2P*	40	12	3.P
V 11	357.190	3S 3P2	3P3	4P.	45*	32	
SC 7	357.289	3S23P3	3\$23P2 3D	2P*	2.P.	12	3 <u>P</u>
V 11	358.163	3S2 3P	3S 3P2	G 2P*	25	21	1S
SC 7	358.433	3S23P3	3S23P2 3D	2P*	. 2P	22.	3.P
B 3	359.611	2 S	6 P	G 2\$	2P*	12	
TIIO	360.185	3S2 3P	3S 3P2	G 2P*	2P	22	1\$
CR 9	363.718	3 S 2 3 P 4	3\$ 3P 5	1D	1P*	21	
SIII	365.503	2S 2P	2P2	3₽ 	3.P	22	'
TI10	365.690	352 3P	3S 3P2	G 2P*	2.P	21	18
F 7	367.466	. 3P	40	2P*	20	12	
F 7	367.787	3P	4D	2.P*	20	23	
 C 3	371.053	2S 2P	2S 4D	3₽*	30	01	
MG 7	371.187	2S 2P3	2P4	3P*	3 P	21	, . ,
CR 6	371.896	3P6 4P	3P6 6S	2P*	25	21	1S 1S
NA 2	372.540	296	2P5 3S	G IS	11*K	01	2P*
MNIO	372.711	3S23P4	3S 3P5	G 3P	3P*	21	2, 4, 1,
	374.023	2\$ 2P3	2P4	3P*	3 F	22	
MG 7	374.957	23 2F3 2P4	2P3 3D	G 3P	3P*	21	2D*
F 2		= .	2P3 4D	10	16*	21	2D*
F 2	375 . 383	2P4	2P3 4D	10	10*	22	20*
F 2	375.745	2P4			30*		2D*
F 2	376.005	2P4	2P3 4S			23	20*
F 2	376.024	294	2P3 30	G 3P	3P*	10.	
F 2	376.688	2P4	2P3 4D	10	1F*	23	2D*
NA 2	376.745	2P6	2P5 3S	G 15	22*K	01	20*
SC 5	377.104	3\$23P5	3S23P4 3D	G 2P*	20	. 23	. 39
F 2	377.638	2P4	2P3 4S	_10.	1P*	. 21	2 <u>P*</u>
FE 5	378.015	3D 4	3D3 4P	3F	3G*	23	A2F
F 2	378.034	2P4	2P3 3D	G 3P	30*	01	2D*
T110	378.040	3S2 3P	3S 3P2	G 2P*	25	11	1\$
AR 5	378.303	3\$23P2	3S23P 4S	18	19*	01	2 9 *
F 2	379.851	2P4	2P3 3D	G 3P	35*	01	20*
SC 5	380.206	3 S 2 3 P 5	3S23P4 3D	G 2P*	20	22	3P
F 2	380.230	2P4	2P3 3D	10	1P*	21	2P*
K 4	381.010	3 P4	3P3 3D	15	1P*	01	2P*
F 7	381.762	3D	4F	2D	2F*	23	
F 7	381.882	30	4 F	20	2F#	34	•
SC11	382.072	3P	30	2P*	2 C	23	
SCII	382.692	3P	30	2P*	20	22	
			2P3 3D	10	10*	22	2P*
F 2	382.891	2P4		2P*	20	22	Gr T
SC11	383.500	3P	3D	G 3P	3P*	22	•
MN10	383.549	3\$23P4	3S 3P5		35*		45*
K 4	383.565	3P4	3P3 4S	G 3P		21	43*
AL 8	384.123	2S22P2	2S 2P3	G 3P	30*	11	
SC 9	384.473	3\$23P	3S 3P2	G 2P*	2 P	12	
B 4	384.767	1S 2P	1S 3D	3P*	3 D	12	

		CONST	GURATION	TENU		DADENT TERM
ION	WAVELENGTH	LOWER	UPPER	TERM LOWER UPPER	JJ	PARENT-TERM LCWER UPPER
K 6.	384.875	3\$23P2	3\$23P 3D	G 3P 3D*	21	LCHEK OFFER
K 4	385.276	3 S 2 3 P 4	3S23P3 4S	G 3P 3S*	21	45*
K 4	385.792	3P4	- 3P3 4S	1S 1P*	01	2P*
SC 5	386.494	3S23P5	3\$23P4 3D	G 2P* 2D	12	3P
AL 7	386.582	2S 2P4	2P5	2P 2P*	22	•
MN10	386.634	3S23P4	3S 3P5	G 3P 3P*	11	
TI11	386.775	3\$2	3S 3P	G 1S 1P#	01	2\$
K 4	386.997	3P4	3P3 4S	G 3P 3S*	01	45*
N 3	387.553	2P3	2P2 3D	4S* 4P	21	3P
N 3	387.671	2P3	2P2 3D	4S* 4P	22	3P
N 3	387.708	2P3	2P2 3D	4S* 4P	23	3₽
0 2	387.764	2P3	2P2 5D	2D* 2F	34	. 1D
K 4	388.738	3S23P4	3S23P3 4S	G 3P 3S*	01	4S*
TIIO	389.243	3\$2 3		G 2P* 2S	21	15
MN10	389.595	3\$23P4	3S 3P5	G 3P 3P*	01	
SC 9	390.221	3S23P	3S 3P2	G 2P* 2P 2D 2P*	11 32	10+
N 3 N 2	390.731	2S 2P2	2S 2P 3S 2S 2P2 3P		23	1P*
	391.166	2S22P2		1D 1F*		20
S 4	391.291	3\$2 31	_ - -	G 2P* 2D	12	. 20
N 2	391•955 392• 7 65	2S22P2 3S2 3I	2S 2P2 3P P 3S2 4D	1D 1D* G 2P* 2D	22 23	20
S 4 F 2	392.957	2P4	2P3 4D	G 3P 3D*	01	4S*
N 3	393.846	2S 2P2	2S 2P 3D	2P 2P*	22	1P*
K 4	396.640	3S23P4	3S23P3 4S	G 3P 5S*	22	4S*
N. 3	399.729	2P3	2P2 3D	2D* 2P	32	10
NA 5.	401.231	2 S 2 2 P 3	2S 2P4	2D* 2D	22	••
K 7	401.565	3S 3P2	3S 3P 3D	4P 4P*	11	3P*
N 3	402.308	2P3	2P2 3D	2D* 2F	23	10
N 3	402.464	2P3	2P2 3D	2D* 2F	34.	10
K 7	403.377	3S 3P2	3S 3P 3D	4P 4P*	21	. 3P*
B 3	403.724	2	P 10D	2P* 2D	23	
. AR 3	405.192	3P4	3P3 5S	G 3P 3S*	01	45*
SI 4	405.341	3:		2P* 2S	21	
8 3	407.142	2	-	2P* 2D	23	
N 3	407-176	2P3	2P2 3D	2D* 2D	33	10
CR 9	407.974	3S23P4	3S 3P5	G 3P 3P*	21	
V 10	409.363	3\$23P2	3S 3P3	G 3P 3P*	2	20.
.CA 3	410.762 412.724	3P6 21	3P5 4S	G 1S 22*K 2P* 2D	01 23	2P*
. B 3	413.928	3P4	P 8D 3P3 3D	1D 3P*	21	2P*
N 3	413.998	2S 2P2	2S 2P 4D	2P 2D*	23	3P*
T111	415.024	3S 3	_	3P* 3P	01	28
CR 9	418.492	3\$23P4	3S 3P5	G 3P 3P*	22	23
CR 9	421.188	3S23P4	3S 3P5	G 3P 3P*	11	
B. 3	421.457	21		2P* 2D	23	
C 2	422.288	252 2		G 2P* 2P	22	1P*
V 13	422.526	3		G 2S 2P*	12	
CR 9	424.383	3\$23P4	3S 3P5	G 3P 3F*	01	
K 8	425.423	2P63P2	2P6.3P 3D	3P 3P*	10	2P*
SC 9	426.741	3S 3P2	3P3	4P 4S*	32	
K 8	429.935	2P63P2	2P63P 3D	3P 3D*	01	2P*
K 8	431.041	2P63P2	2P63P 3D	3P 3D*	12	2P*
MG 7	431.334	2522P2	2S 2P3	G 3P. 3D*	11	
N 2	431.709	2S22P2	2S 2P2 3P	G 3P 3P*	12	· 4P
K 8	432.110	2P63P2	2P63P 3D	3P 3D*	11	29*

		CONSTG	URATION	TERM		PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER	LOWER UPPE	R JJ	LOWER UPPER
N 2	432-115	2S22P2	2S 2P2 3P	G 3P 3P4		4P
0 2	432.539	2P3	2P2. 4S	2D* 2D	33	10
N 2	432.736	2S 2P3	2S 2P2 5D	5S* 5P	23	4P
8 3	434.684	25 21 3 2P	6D	2P# 2D	12	••
K 8	435.317	2P63P2	2P63P 3D	3P 3D*		2P*
K 8	435.562	2P63P2	2P63P 3D	3P 3D*		2P*
C 2	435.721	252 2P	2S 2P 3P	G 2P* 2D	12	1 P*
C 2	435.808	2S2 2P	2S 2P 3P	G 2P* 20	23	1P#
K 8	435.991	2P63P2	2P63P 3D	3P 3P4		2P*
N 2	437.093	2S22P2	2S 2P2 3P	G 3P 3C		40
N 2	437.151	2S22P2	2S 2P2 3P	G 3P 3D		4P
K 8	437.234	2P63P2	2P63P 3D	3P 3P*		2P*
K 8	437.238	2P63P2	2P63P 3D	3P 30*		2P*
N 2	437.275	2S22P2	2S 2P2 3P	G 3P 3C*		4P
B 3	437.993	29 2P	65	2P* 2S	21	••
K 3	440.709	3S23P5	3S23P4 4S	G 2P* 2C	22	10
MG 6	440.745	2S 2P4	2P5	2P 2P*		
N 2	441.590	25 2F4 2P2	2P 6D	G 3P 3C		
K 8	442.001	2P63P2	2P63P 3D	3P 3P		2P*
AR 4	442.561	3\$23P3	3S23P2 3D	2D* 2F	23	10
V 13	443.211	352573	3P	G 2S 2P*		••
P 4	444.448	3S 3P	3S 4D	3P* 3D	01	
CR 5	447.065	3D2	3D 4P	1D 1F*	_	20
F 6	447.229	2S 3P	2S 4D	3P* 3C	01	
F 6	447.342	2S 3P	2S 4D	3P* 3D	12	
MN13	447.530	3S23P	3S 3P2	G 2P* 2D	23	
F 6	447.559	2S 3P	2S 4D	3P* 3C	23	
T.I. 9	447.975	3\$23P2	3S 3P3	G 3P 3P4		
N 2	448.693	2\$22P2	2S 2P2 3P	G 3P 3S		4 P
Ņ 2	449.015	2S22P2	2S 2P2 3P	G 3P 3S		4P
v 11	449.144	3\$2 3P	3S 3P2	G 2P* 2D	23	15
F 2	450.129	2P4	2P3 3D	1S 1P*		20*
SC 9	451.452	3\$23P	3S 3P2	G 2P* 2D	22	20
V 9	452.527	3S23P3	3S 3P4	G 4S* 4P	21	
N 2	453.074	2S 2P3	2S 2P2 4D	5S* 5P	22	4 P
SC10	455.237	3S 3P	3P2	3P* 3P	01	28
N 3	457.150	2P3	2P2 3S	2D* 2D	33	10
V 9	457.657	3\$23P3	3S 3P4	G 4S* 4P	22	
N 3		2P3	2P2 3D			10
B 3	458 -444		2P2 30 5 0		. 23	10
AR 4	458.834 458.034	2P 3S23P3			12	10
AR 4	458.924			2D* 2D	. 22	
TI12	459.183	3\$23P3 3\$	3S23P2 3D 3P	2D* 2D G 2S 2P*	32.	1 D
S 6	459.893					
S 6	465.096 465.431	3D	4F	2D 2F		and a sign of the second secon
8 3		30	4F	2D 2F		The second secon
CR 5	465.962	2P 3D2	5S	2P* 2S		20
K 9	467•448 467•599	3D2 3P	3D 4P	3P 3F* 2P* 2D		2D
AR 3			3D		22	20+
	468.114	3P4	3P3 3D	G 3P 304		2P*
AR 3	468.567	3P4	3P3 3D	10 104		20*
0 2 N 3	. 468.749	2P3	2P2 3D	2P* 2P		1D
	469-104	2P3	2P2 3S	45* 4P	. 23	3 <u>P ~ </u>
N 3	469.687	2P3	2P2 3S	4S* 4P	22	3P
AR 3	469.749	3P4	3P3 3D	1D 1F4		2 <u>P*</u>
AR 3	470.662	3P4	3P3 3D	G 3P 304		2P*
AR 3	471.494	3P4	3P3 3D	G 3P 3D	23	2P*

		CONETCH	DATION		T S	RM		PARENT	_TCDM
ION	WAVELENGTH	CONFIGU LOWER	UPPER		LOWER		JJ		UPPER
AR 3	471.666	3P4	3P3 3	rr .	3P.	3C*	01		2P*
AR 4	473.548	3S23P3		SD G	2P*	2P	12		10
AR 4	473.925	3\$23P3		ID .	2P*	2.P	. 22		10
P 5	476.130	302373		F	20	2F#	34		
P 5	478.454	3D		F	20	2F*	23		*****
K 3	478.546	3S23P5		S G	•	4P	21		3 <i>P</i>
T112	479.339	. 3\$	3P	Ğ		2P*	11		
N 2	482.873	2S 2P3	2S 2P2 3	SD.	3D*	3 P	32		2D
AR 4	484.984	3\$23P3	3S23P2 3	D .	2D*	20	33		3P
AR 4	486.158	3\$23P3	3S23P2 3	D	2D*	2 D	22		3P
AR 3	486.236	3P4	3P3 3	D	10	1P*	21		2D*
AR 4	486.475	3S23P3	3S23P2 3	D	2D*	2.D	32		3P
N 2	487.203	2P2	. 2P 5	D .	10	10*		ange toda i Managara	*
AR 7	487.620	2P63P2	2P63P 3	BD	3 P	3D*	01		2P*
AR 7	487.814	2P63P2	2P63P 3	ID ,	3₽	3P*	10		2P*
AR 7	488.753	2P63P2	2P63P 3	D	3P.	3 D*	12		2P*
SC 7	488.866	3S23P3	3S 3P4		2P*	2.5			
TI 10	489.278	3S2 3P	3S 3P2	G	2P*	2D	23	1\$	
AR 7	489.715	2P63P2	2P63P 3	BD	3.P	3.D*	. 11		2P*
SC 7.	491.004	3S23P3	35 3P4		2P*	28.	21		
AR 7	492.593	2P63P2	2P63P. 3	SD.	3P	3D*	23		2P*
AR 7	492.967	2P63P2	2P63P 3	30	3P	3D*	22		2P*
AR 7	494.249	2P63P2		3D	3P.	3.D ★ .	21.		2P*
N 2	495.347	2S 2P3		3D	3D*	3F	. 34		2D
AR 3	496.315	3P4		•S	10	1 P#	21		2P*
AR 7	496.417	2P63P2		3D	3 P	3P* .	21	4.5	2P*
AR 7	496.521	2P63P2		30	3P	3P*	12		2P*
AR 3	496.753	3P4		s c		1D#	. 22		20*
NA 7	499.528	2S 2P2	2P3		25.	2P*	12		
AR 3	499.710	394		s c		10*	12		2D*
TI 8	50G.199	3\$23P3	3S 3P4			4P	21		204
AR 7	500.920	2P63P2		3D .	3 P	3P*	22		2P*
N 2	502.648	25 2P3		3D	55*	50	23		4 <u>P</u>
AR 3	502.751	3P4		3D	1D	3D*	22		2P*
K 2 TI 8	504.184	3P6		3D G		1 P* 4 P	01		2P*
V 5	505•035 506•981	3S23P3	3S 3P4		4S* 2P*	25	22 21	3.0	10
AR 3	507.577	3P6 4P 3P4		SS S	10	23 3P*	22	15	1S 2P*
N 3	509.418	2S 2P2		r3 ID	2 P	28*	22		3P*
N 2	510.168	2S 2P2		3D	3D*	3D	33		20
N 2	515.792	29 2P2		D.	10	3F*	22		20
CA 5	516.642	3S23P4			3P	3D*	23		45*
CA 5	521.821	3S23P4		D G		3D*	11	·	45*
CA 5	522.552	3S23P4		SD G		30*	12		45*
N 3	523.047	2P3	2P2 3		2P*	20	23	•	1 D
CA 5	524.267	3S23P4	3S23P3 3		3P	30*	01		45*
AR 4	526.138	3S23P3	3S23P2 3		2D*	2F	34		3 P
N 2	526.782	2S 2P3	2S 2P2 3		3P*	3 P	22		2D
AR 4	527.202	3\$23P3	3\$23P2 3		2D*	2 F:	23 -		3P
AR 4	527.588	3S23P3	3523P2 3		2D*	2 F	33		.3P
V 12	527.864	3\$2			15	3P*	01	•	25
8 3	528.407	2P	4	٠S	2P*	28	11		
AR 4	529.320	3S23P3		D	2P*	2 P	21		3P
N 2	529.405	2P2	2P 5	D	15	10*	01		

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- 			GURATION	TER			PARENT	
ION	WAVELENGTH	LOWER	UPPER		UPPER	JJ	LOWER	UPPER
CL 4	530.651	3\$23P2	3S23P 3D	10	1F*	23		2P*
AR 4	531.587	3\$23P3	3S23P2 3D	2P*	2 P	12		3P
AR 4	532.039	3S23P3	3S23P2 3D	2P*	2 P	22		3P
CA 5	533.498	3S23P4	3S23P3 3D	G 3P	5D*	01		45#
AR 3	533.952	3P4	3P3 4S	. 1D	10*	22		2D*
N. 2	5.34• 477	2P2	2P 3D	G 3P	1D*	12		
. AR. 3	536.354	3P4	- 3P3 3D	1S .	1P*	01		2D*
P. 12	536.552	252	2S 2P	G 1S	3P*	01		
N 2	536.683	2P2	2P 3D	G 3P	3F#	23	 -	
AR 3	541.326	3P4	3P3 3D	1D	1F#	23		2D*
0 3	554.903	2S 2P3	2\$22P 3P	3D*	3 P	21		
NA 7	557•456	2S 2P2	2P3	2P	2P*	22		
N. 2	559.132	2S 2P3	2S 2P2 30	3P*	3 C	23	ē	2D
S 5	567.784	3S 3D	3\$ 4F	30	3.F*	34		
S 5	568.090	3S 3D	3S 4F	30	3F*	23		
S 5	568 . 350	3S 3D	3S 4F	3D	3F*	12		
AR 5	570.929	3S23P2	3S 3P3	10	3 S *	21		
. NE .6	571.263	2\$ 2P2	2P3	2\$	2P*	12		•
.F.,1	572.002	2P5	2P4 3D	G 2P*	20	23		18
C 2	572.062	2S 2P2	2S 2P 3D	20	20*	33		1P*
E 1	573.228	2P5	2P4 3D	G 2P*	2 D	12		18
T111	573.683	3S2	3S 3P	G 15	3P*	01		28
0 2	574.747	2S 2P4	2S 2P3 3D	4P	4D*	34		5S* ·
. 02	575.446	2S 2P4	2S 2P3 3D	4 P	4D*	23		5S*
.0. 2.	576.110	2S 2P4	2S 2P3 3D	4P	4D*	12		5S*
N 3	576.401	2P3	2S 2P 3P	2D*	2 P	32		1P*
1	576.977.	2\$22P4	2S 2P5	10	1P*	21		
K 6	583.424	3\$23P2	3S 3P3	15	10*	01		
C 3	585.568	2P2	2P 3S	3P	3P*	01		
. K 4	590.435	3\$23P4	3S23P3 3D	G 3P	50 *	- 01		45*
CL 2	602.792	3P4	3P3 3D	G 3P	3P*	22		2P*
	602.795	3P4	3P3 3D	G 3P	3P*	21		2P*
CR 6.		3P6 4P	- 3P6 5S	2P*	2 S	11	15	15
CL 2	605.395	3P4	3P3 3D .	10	1P*	21		2D*
N2		2P2	2P 4S	15	1P*	01	•	
CL. 2	606.925	3P4	3P3 3D	G 3P	3P*	01		2P*
CR 6	609.486	3P6 4P	3P6 5S	2P*	25	21	15	15
N 2	620.421	2S 2P3	2S 2P2 3S	3D*	3 D	33		2D
K 6	621.657	3\$23P2	3S 3P3	G 3P	3P*	11		
K 6	621.874	3S23P2	3S 3P3	G 3P	3P*	12		
AR 3	622.051	3P4	3P3 3D	10	10*	22		2D*
CL 2	627.712	3P4	3P3 3D	10	1F*	23		2P*
F 1	634.921	2P5	2P4 4D	G 2P*	2 P	22		1D
B 2	638.759	2S 2P	2S 7D	3P*	3 D	23		20
F I	640.401	2P5	2P4 3D	G 2P*	20.	22		1 D
c 2	640.837	2\$ 2P2	2S 2P 3D	4P	4P*	11		3P*
Č 2	641.099	2S 2P2	2S 2P 3D	4P	4P*	22		3P*
NE 6	641.922	2S 2P2	23 2F 39 2P3	2P	2P*	22		.
SC 9	643.388	3\$23P	3S 3P2	G 2P*	2 D	23		
0 1	644.409	2S22P4	2S 2P5	15	1P*	01		
B 2	644.564	2S 2P	29 2P 3P	3P*	3C	22		2P*2
N 2	645.012	2S 2P3	2S 2P2 3D	3D*	3C	33		4P
N 2	645.349	2S 2P3	2S 2P2 3D	3D*	3D	22		4 P
AR 5	646.135	3S23P2	3S 3P3	15	1P*	61		1
F 1	648.279	2P5	2P4 4D	G 2P*	20	23		10
1 4	UT UB C 17	27	454 40	G 277	<i>2</i> U	دے		

	,	CONFIGU	IRATION	TE	RM	a e de	PARENT-TERM
ION	WAVELENGTH	LOWER	UPPER		UPPER	JJ	LOWER UPPER
N 2	649.709	2S 2P3	2S 2P2 3D	3D*	3 P	32	4P
CL 2	651.616	3P4	3P3 3D	G 3P	35*	11	2D*
N 2	652-235	2S 2P3	2S 2P2 3D	3D*	3 F	34	4P
N 2	652.617	2S 2P3	2S 2P2 3D	3D*	3F	23	4P
N 2	652.947	2\$ 2F3	2S 2P2 3D	3D*	3 F	12	4P
CL 2	653.111	3P4	3P3 3D	G 3P	3S*	01	2D *
F 6	657.226	2S 2P	2P2	1P*	15	10	20-
5 5	659.073	3S 3P	3S 3D	3P*	3 D	11	
S 4	660.092	3S2 3P	3S2 3D	G 2P*	2 D	22	
		2S 2P2	2'S 2P 3S	2P	2P*	22	3P*
N 3 S 4	660.574	35 3P2	3S 3P 3D	4P	4P*	11	3P*
	660.607	25 2P4	2P5	20	2P*	21	3, .
	661.515		3S 3P 3D	4P	4P*	21	3P*
S 4	662-103	3S 3P2	3S 3P 30	3P*	3 C	22	264
S 5	662.639	3S 3P	2P5	2D	2 P *	32	
0 2	662.751	2S 2P4		G 2P*	2 P +	11	10
F 1	664.988	2P5	2P4 4D	G 2P*	2 P	12	10
F 1	670.752	2P5	2P4 30			01	2D*
CL 2	671.493	3 P4	3P3 30	15	1 P *		2U*
CL 2	673.900	3P4	3P3 3D	10	30*	22	2 P*
P 5	674.980	3D	4 F	2 D	2F*	34	
BE 3	675.578	1S 2P	1S 3D	3P*	3 D	23	
B 2	676.219	2S 2P	2P 4P	1P*	10	12	2P*2
P 5	677.918	3 D	4F	2D	2F*	23	
F 1	678.387	2P5	2P4 3D	G 2P*	2 P	21	10
B 2	679.901	2S 2P	2 S 5D	3P*	3 D	12	*
8 2	680.693	2S 2P	2S 5D	3P*	3 D	01	
C 2	681.747	2S 2P2	2S 2P 4D	20	2F*	34	3P*
Č 2	681.860	2S 2P2	2S 2P 4D	2D	2F*	23	3P*
\$ 3	690.008	3S23P2	3\$23P 3D	10	1F*	23	•2P*
\$ 3	691.702	3S23P2	3S23P 3D	G 3P	3P#	11	· _
F 1	693.035	2P5	2P4 3D	G 2P*	2 S	21	10
CL 3	694.514	3S23P3	3S23P2 3D	2D*	2F	34	3P
N 2	694.749	2S 2P3	2S 2P2 3S	3P*	3D	23	2D
CL 3	696.853	3S23P3	3S23P2 3D	2D*	2F	23	3 P
CL 3	697.184	3\$23P3	3S23P2 3D	20*	2 F	33	3 P
AL 9	702.422	2S2 2P	2S 2P2	G 2P*	4 P	23	J ,
V 4	707.646	3D2	3D 4P	3P	1P*	21	2D
CL 2	708-984	3P4	3P3 3D	10	1F*	23	2D*
AR 5	711.342	3S23P2	3\$ 3P3	G 3P	3 P#	11	25.
AR 5	711.488	3\$23P2	3\$ 3P3	G 3P	3P#	12	
AR 5	715.549	3523P2	3S 3P3	G 3P	3P*	2	
		2S 2P2	2S 2P 3D	2P	20*	12	1P*
C 2 C 2	719.815 720.333	25 2F2 25 2F2	2S 2P 3D	2 P	20+	23	1P*
0 1			25 2F 30 2P3 3D	G 3P	3F*	22	2P*
	724.627	2P4		3P*	3 D	23	4P
N 2	725.616	2S 2P3	2S 2P2 3D				4P
N 2	726.103	2S 2P3	2S 2P2 3D	3P*	30	01	46
K 6	726.712	3\$23P2	3S 3P3	G 3P	30*	21	
N 2	731.634	2S 2P3	2S 2P2 3D	3P*	3 P	22	4P
B 2	734.999	2S 2P	2S. 4D	3P* .	3 D	01	20+2
B 2	745.016	2P2	2P 5D	3P	30*	23	2P*2
0 1	745.913	2P4	2P3 4S	G 3P	3P*	22	2P*
CA 5	749.900	3S23P4	3S 3P5	1D	3 P.*	22	
CL 2	760.338	3P4	3P3 4S	G 3.P	1 C*	22	20*
F 1	760.415	2P5	2P4 4D	G 2P*	2 P	11	3P
F 1	764.158	2P5	2P4 3D	G 2P*	4P .	. 23	3Р

TABLE III. - FINDING LIST - Continued

(b) Continued

		CONFIG	URATION	TERM		PARENT-TERM	
ION	WAVELENGTH	LOWER	UPPER	LOWER UPPER	JJ	LOWER	UPPER
CL 2	765.752	3P4	3P3 4S	G 3P 1C*	12		20*
F 1	766.905	2P5	2P4 4D	G 2P* 2P	21		3P
F 5	768.505	2S 2P2	2P3	2P 2P*	11		
FE 7	776.654	3D 4P	3D 4D	3F* 3G	23	20	2D
F 1	779.581	2P5	2P4. 40	G 2P* 2D	12	~~	3 P
MG 8	780.217	2S2 2P	2S 2P2	G 2P* 4P	23		
FE 7	782.048	3D 4P	3D 4D	3F* 3G	34	2 D	20
B 1	783.803	2S2 2P	25 2P 3P	G 2P* 2P	22		1P*
S 2	785.263	3S23P3	3523P2 3D	2D* 2C	22		10
P 3	785.828	3S 3P2	3S 3P 4S	4P 4P*	22		3P*
FE 7	786.303	3D 4P	30 40	3F* 3G	45	20	20
NA 7	786.993	2S 2P2	2P3	2P 2C*	23		
FE 7	794.414	3D 4P	3D 4D	3F* 3G	44	20	20
0 2	794.980	2S22P3	2S 2P4	2P* 2C	12		
N 2	796.398	2S 2P3	2S 2P2 4S	5S* 5P	23		4P
F 1	797.671	2P5	2P4 4S	G 2P* 2P	12.		3P
S 2	799.410	3\$23P3	3S23P2 3D	2D* 2F	23		10
0 1	803.350	2P4	2P3 3D	G 3P 3D*	23		20*
0 1	805.795	2P4	2P3 3D	G 3P 3D*	12		2D*
o i	806.844	2P4	2P3 3D	G 3P 3S*	21		20*
B 2	806.972	2P2	2P 4D	3P 3C*	12		2P*2
B 2	810.661	2S 2P	2P 3P	1P* 1C	12		2P*2
P 4	819-935	3S 3P	3S 3D	3P* 3D	11		21.2
V 5	820.588	3P6 4P	3P6 5S	2P* 2S	11	15	15
P 4	824-291	3S 3P	3S 3D	3P* 3D	22	13	13
V 5	828.608	3P6 4P	3P6 5S	2P* 2\$	21	15	15
	833-304	3\$23P5	3S23P4 5S	G 2P* 2D	22	1.3	10
CL 1	839.837	3S23P2	3523F4 55	G 3P 3P*	2		10
CL 4	348•488	3S23P2 3S23P3	3S23P2 3D	2D* 2P	21		3P
S 2 P 3	849.176	3\$2 3P	3\$23F2 3D	G 2P* 2D	22		36
	849.270	3S23P3	3S23P2 3D	2D* 2P	22		3 P
S 2	849.496	3\$23P3	3S 3P4	2D* 2P	22		21
CL 3 NA 8	849.800	2S 2P	2P2	1P* 1D	12		
	851.917	3S23P3	3S 3P4	2P* 2S	11		
	852.874	3\$23P3	3S 3P4	2P* 2S	21	-	
	854.688	3\$23P4	3S 3P5	- 1D 3P*	22		
K 4		3S23P3		20* 20	33		3 P
S 2	856.939	332373		20+ 20	23		
B 2	855.472	2P2	2P 40	10 1F*	23		2P*2
S 2	862.679	3\$23P3	3S23P2 3D	20* 20	22		3 P
S 2	862.843	3\$23P3	3S23P2 30	20* 20	. 32		3P
B 1	863.549	2S2 2P	2S 2P 3P	G 2P* 2C	12		16*
B 1	864.137	2S2 2P	2S 2P 3P	G 2P* 2D	23		1P*
B 2	865.729	· 2P2	2P 3D	10 1F*	23		2P*2
AR 7	876.817	352	3S 3P	G 1S 3P*	01		28
N 1	901.929	2S 2P4	2P 5	2D 2P*	21		
N 1	904.245	2S 2P4	2P5	2D 2P*	32		
0 1	910.259	2P4	2P3 3D	1D 1P*	21		2D*
NE 6	913.894	2S 2P2	2P3	2P 2D*	23		-
MN 6	915.397	3D 4P	3D 4D	3F* 3G	23	2D .	20
MN 6	920.611	3D 4P	3D 4D	3F* 3G	34	20	20
MN 6	925.704	3D 4P	3D 4D	3F* 3G	45	20	20
CL 3	929.617	3\$23P3	3S 3P4	2P* 2P	11	- -	
CL 3	930.363	3S23P3	3S 3P4	2P* 2P	21		
MN 6	933.524	3D 4P	3D 4D	3F* 3G	44	20	2D
N 1	933.528	2P3	2P2 5D	2D* 2F	34		10
CL 3	935.919	3\$23P3	3S 3P4	2P* 2P	12		
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TABLE III. - FINDING LIST - Continued

(b) Continued

		COA	IF I GUI	DATIO	N			T	ERM		PARENT-	-TERM
ION	WAVELENGTH	LOWER			PER		1	DWER	UPPER	IJ	LOWER	UPPER
P 2	939.165	3S23P2	`	3523		3D	_	3P	3P#	11	, L 9 11 L 11	•
s 2	940.405	3S23P3		3523		_		20*	20	22		10
N 4	951.321	28	2 P		P2	73		10*	15	10		10
0 2	952.939	2S 2P4	ZF .		P5			2P	2P*	22		
NE 7	974.022	25 25	2P		P2			1P*	10	12		
P. 2	975.351	3S23P2	28	35 3				10	3 S*	21		
					3P5	20	_	15	1P#	01		2P*
	980.482	396				3D	G		_	22		27+
N 1	981-225	2\$22P3		25 2		20		20*	2C			4.0
N 2	982.153	2S 2P3			2P2	22	_	3P*	3 P	10		4P
CL 4	985.612	3S23P2			3P3	30	G	3 P	30*	21		2P*2
B . 2.	987.551	2P2			2P	3D		3 P	3 C*	22		
N. 1	992.327	2P3		_	2P2	3D		2D*	20	33		10
N 1		2P3			2P2		_	2D*	2 D	22		1D
. CL .6		3 \$ 2			35	3P		15	3P*	01		25
	1013.407	303			3D2		G	4F	40≠	44		A3P
Y3		3D3			3D2		G	4F	4C*	54		A3P
	1017.400	3D3			302	4P	G	4F	4D*	22		A3P
. v3		. 303		3	302	4P	G	4F	4D*	.43		A3P
. V 3.	1019.169	303		3	3D2	4P	G	4F	4C*	32		A3P
. C . 2	1033.042	2S 2P2		25 2	2P	3\$		20	2P*	32		3P*
_ C2_	1033.696	2S 2P2		25 2	2P	35		2D	2P*	21		3P*
N1	1035.857	2P3		2	2P2	45		20*	2 D	33		1 D
CL. 3.	1040.492	3S23P3		35 3	3P4			2P*	2 D	12	•	
CL .3.	1041.349	3S23P3		35 3	P4			2P*	20	22		
	1042.286	3\$23P3		3S 3	3P4			2P*	20	. 23		
N 1		2P3		_	2P2	4D		2P*	2 P	22		10
B. 2		2P2			P	3D		3 P	3P*	10		2P*2
B 2		2P2			P	3D		3P	3P*	01		2P*2
В 2		2P2			2P	3D		3P	3P*	12		2P*2
B 2		2P2			2P	3D		3P	3P*	21		2P*2
B. 2.		2P2		_	P	3D		3P	3P*	22		2P*2
V 3	1066.172	303			302	4P		2G	2H#	56		A1G
N. 1	1075.931	2\$22P3		25 2		••		2P*	2D	12		-10
B 1	1082.616	252	2P	25 2		3P	G	2P*	20	12		3P*
8E 1		25	2P		2 P	3P	•	3P*	35	11		2P*2
BE 1	1085.234	25	2P		P	3P		3P*	35	01		2P*2
	1085.836	252	2P	25 2		3P	c	2P*	20	23		3P*
BE 1	1086.069	252	2P		P	3P	G	3P*	35	21		2P*2
N 1	1103.368	2P3	21		2P2	3D		2P*	2 F	11		1D
N 2	1105.050	2S 2P3		25 2		3D		35*	3 P	12		4P
V3	1116.932	303			3D2	4P		4P	4P*	23		A3P
. V3.					302	4P		4P	4P*	33		A3P
v 3	1120.433	3D3 3D3			302	4P		4P	4P*	22		A3P
						Tr						ASP .
C 1	1120.795	2S 2P3			P4			3D*	3 P	10		
	1121.539	2S 2P3			P4			30*	3 P	21		
C 1	1122.667	2S 2P3			P4			3D*	3 P	22		
C 1	1122.705	2S 2P3			P4	4.0		3D*	3P	32		4 2 C
. V3.	1123.320	3D3			3D2			4 P	4P*	32		A3P
V 3.	1124.172	3D3			3D2		^	2H	2H*	66	,	AIG
¥3.	1130.958	3D3			D2			4F	20*	33		A3F
V 3	1133.182	303		_	D2	4P	G	4F	2D*	43		A3F
S. 2	1134.510	3S23P3		35 3			_	2D*	2P	22		
V 3	1137.129	303			D2		G	4F	4D*	54		A3F
SI 3	1138.903	2P63P2		2P63		30		3P	3 C *	01		2P*
SI 3.	1139.394	2P63P2		2P63	IP.	3D		3P	3C*	12		2P*

TABLE III. - FINDING LIST - Continued

(b) Continued

		CONETC	LID AT FON		Trou		PARENT-TERM
ION	WAVELENGTH	LOWER	URATION UPPER	LOW	TERM Er upper	IJ	LOWER UPPER
V 3	1139.444	303	3D2 4P	G 4F	4C*	43	A3F
SI 3	1140.139	2P63P2	2P63P 3D	3 7 F	3D*	11	2P*
		303	302 4P	G 4F	50,∓ 4€*	32	A3F
	1141.816		2P63P 3D	. G 47		23	2P*
SI 3	1142.791	2P63P2			30*		
SI 3	1143.017	2P63P2	2P63P 3D	3P		22	2 <u>P</u> *
CL 1	1143.120	3\$23P5.	3\$23P4 3D	G 2P		22	10
SI 3	1145.164	2P63P2	2P63P 3D	3P	3€*	21	2P*
V 3	1146.845	3D3	3D2 4P	4P		34	A3P
SI 3	1148.141	2P63P2	2P63P 3D	3P	3P*	10	2P*
V 3	1151.171	303	3D2 4P	4 P	4C*	23	A3P
V 3	1151.689	303	3D2 4P	G 4F	2F*	54	A3F
V 3	1153.003	303	3D2 4P	4P	4C*	12	A3P
V 3	1153.664	303	3D2 4P	G 4F	2F*	,43,_	A3F
B 1	1153.965	2S 2P2	2S 2P 3D	20		33	1P*
CL 1	1155.222	3S23P5	3S23P4 3D	G 2P	* 20	. 12	10
SI 3	1158.846	2P63P2	2P63P 3D	3P	3 P *	21	2P*
V 3	1158.982	303	3D2 4P	G 4F	4F*	45	4 A3F
V 3	1160.979	303	3D2 4P	G 4F	4F*	34	A3F
SI 3	1161.522	2P63P2	2P63P 3D	39	3P*	12	2P*
v 3	1162.398	303	3D2 4P	G 4F		55	A3F
v 3	1163.446	303	3D2 4P	G 4F	* * * *	44	A3F
v 3	1164.634	303	3D2 4P	G 4F		33	A3F
v 3	1165.481	303	3D2 4P	G 4F	4F*	22	A3F
SI 3	1165.611	2P63P2	2P63P 3D	3.P	3 P *	22	2P*
8 1	1166.864	2S2 2P	2S 2P 3P	G 2P		12	3P*
		303	3D2 4P	G 4F	4F*	43	A3F
	1167.558	2\$2 2P	2S 2P 3P	G 2P		11	3P*
B 1	1167.621				4F*	32	A3F
V 3	1168.072	303					
B 1	1169.397	2S2 2P	2S 2P 3P	G` 2P		22	3P*
B 1	1170.075	2S2 2P	2S 2P 3P	G 2P		. ,21	3P*
V 3	1171.832	303	3D2 4P	G 4F		56	A3F
V 3	1175.081	303	302 4P	21		. 54	AIG
V 3	1175.253	303	3D2 4P	G 4F		45	A3F
y 3	1177.487	303	3D2 4P	4P	45*	12	A3P
V 3	1178.644	303	3D2 4P	G 4F	4G*	34	A3F
V .3	1181.405	303	3D2 4P	G 4F		23	A3F
8 2	1211.745	2P2	2P , 3S	3P	3.P*	11	2P*2
B 2.	1212.079	2P2	2P 3S	3 P	3P*	10	2P*2
B 2	1213.061	2P2	2P 3S	3 P	3P*	01	
SI 2	1221.641	3\$ 3P2	3S 3P 3D	4P	4D*	32	3₽#
V 3	1268.491	303	3D2 4P	2G	2G*	55	A3F
V 3	1270.556	3D3	3D2 4P	2 G	2G*	44	A3F
V 3	1274.352	303	302 4P	2G	2G*	54	A3F
BE 1	1291.136	2P2	2P 30	10	1F*	23	2P*2
c i	1294.182	2S 2P3	2P4	3P			The second secon
či	1296.387	2S 2P3	2P4	30			COLUMN SET OF A SAME SET SET SET SET SET SET SET SET SET SE
V 3	1304.716						
S 2		3D3	3D2 4P	. 4 <u>P.</u>			A3F
	1305.830	3\$23P3	3S. 3P4	2 P.			CONTRACTOR OF THE STATE OF THE
	1306.314	3\$23P3	3\$ 3P4	2P:			
S 2	1308.432	3\$23P3	3S 3P4	2P:			
V 3	1308.824	303	3D2 4P	2G	20*	43	43F
V 3	1310-438	303	3D2 4P	4P	4C*		A3F
V 3	1312.313	303	3D2 4P	4P	4D*	33	A3F
V 3	1313.252	303	3D2 4P	2 G		54	A3F
V 3	1314.773	3D3	3D2 4P	4P	•	12	A3F
B 1	1314.892	2S2 2P	2S 2P2	G 2P	* 2P	. 11	and the state of t

TABLE III. - FINDING LIST - Concluded

(b) Concluded

		CONE	GURATION	. ТЕ	RM	PARENT-TERM		
ION	WAVELENGTH	LOWER	UPPER	LOWER	UPPER	JJ	LOWER	UPPER
V 3	1316.005	3D3	3D2 4	P 26	40*	43		A3F
V 3	1316,540	303	3D2 4		4D*	22		A3F
N 1	1320-104	2S 2P4	2P5	2 P	2P*	22		*
V 3	1331.375	3D3	3D2 4	P 2G	2F*	54		A3F
V 3	1335.443	303	302 4		2F*	43		A3F
C 2	1342.821	2S 2P2	2S 2P 3	S 2S.	2P*	12		3P*
C 2	1344.100	2S 2P2	2S 2P 3		2.P*	11		3P*
. V 3	1349.023	3D3	3D2 4		2G*	55		A3F
C 2	1349.381	2S 2P2	2P3	25	2 P*	12		
V 3	1351.645	303	302 4	P 2H	2G*	65		A3F
V 3	1355.249	3D3	3D2 4	P 2H	2G*	54		A 3F
V 3	1389.502	303	3D2 4	P 2D	20*	33		A3F
B 2	1392.333	2P2	2P 3		1P*	01		2P*2
BE 1	1400.935		P 2P 3	P 3P*	3 D	23		2P*2
V 3	1411.270	303	3D2 4		2F*	34		A3F
BE 1	1428.806	25 2	P 2P 3	P 3P∗	3.P	12		2P*2
TI 3	1431.728	3D2	3D 4	P 3P	1P*	. 21		2D
BE 1	1432.667	2S 2	2P 2P 3	P 3P*	3 P.	. 22		2P*2
BE 1	1433.166	25 2	2P 2P 3	P 3P*	3 F	21		2P*2
B 1	1463.556	2S 2P2	2S 2P 4	D 4P	4D*	12		3P*
B 1	1467.146	2S 2P2	2S 2P 4	D 4P	4P*	21		3P*
B 1	1571.297	2S 2P2	2S 2P 3	D 4P	4P*	11		3P*
.B 1.	1574.152	2S 2P2	2S 2P 3	D 4P	4P*	22		3P*
B 1	1583.755	2S 2P2	25 2P 4	S 4P	4P*	23		3P*
N 1	1587.581	25 2P4	2S 2P3 3	D 4P	4C*	34		5S*
N 1	1593.658	2S 2P4	2S 2P3 3	D 4P	40*	23		5S*
В 3	1596.446	3	3S 4	P 2S	2P*	12		
В 3	1596.546	2	3S 4	P 2S	2 P *	11		
N 1	1603.098	2S 2P4	2S 2P3 3	D 4P	4 D*	12		5 S*
B 1	1666-234	2S 2P2	2S 2P 3	D 2P	2C*	12		1 P*
B 1	1672.011	2S 2P2	2S 2P 3	D 2P	2C*	23		1P*
AL 2	1762.359	2P63P2	2P63P 3	D 3P	30*	12		2₽*
AL 2	1764.142	2P63P2	2P63P 3	D 3P	3C*	11		2P*
AL 2	1764.217	2P63P2	2P63P 3	D 3P	3C*	01		2P*
AL 2	1768.663	2P63P2	2P63P 3	D 3P	3C*	22		2P*
AL 2	1771.032	2P63P2	2P63P 3	D 3P	3D*	23		2P*
AL 2	1779.257	2P63P2	2P63P 3	D 3P	3 C*	21		2P* *
P 1	1837.052	3\$23P3	3S 3P4	2P*	2 P	11		
P 1	1839.333	3S23P3	3S 3P4	2P*	2 P	21		
P., 1 .	1845.007	3S23P3	3S 3P4	2P*	2 P	12		,
8E 1	1847.318	2S 2	P 2P 4		10	12		2P*2
AL 1	1883.180	3 \$ 2 3	3S 3P2	G 2P*	25	11		
AL 1	1891.063	3\$2 3	3P 3S 3P2	G 2P*	2 \$	21		
.B 3	1954-234	3	3P 4	2P*	20	12		
B 3.	1954.897	3	3P 41		2 D	23		

TABLE IV. - CALCULATED AND OBSERVED SPECTRA

Ion	Wavelength,	angstroms	Reference	Ion	Wavelen	Defenses	
1011	Calculated	Observed		100	Calculated	Observed	Reference
Al X	39.627	39.628	8	Ti XII	27.616	27.489 ± 0.005	5
	39.904	39.925	8		27.922	27.818 ± 0.005	5
	40.433	40.421	8	Ті ХШ	21.027	21.035 ± 0.005	6
	42.322	42.310	8		21.121	21.127 ± 0.005	6
	42.413	42.403	8	** ****			
	43.561	43.577	8	V XIV	18.758	18.782 ± 0.005	6
	50.742	50.717	8		18.870	18.891 ± 0.005	6
	50.920	50.903	8	v xv	22.192	22.20	7
	56.611	56.590	8	Fe XV	66.234	66,238	9
	56.717	56.696	8		14.461		7
	56.948	56.945	8	Fe XVIII		14.55	7
	59.110	59.107	8		16.009	16.01	
	60.928	60.896	8	Co XVII	15.820	15.828 ± 0.005	5
Si XI	36.758	36.772	8		15.546	15.551 ± 0.005	5
	37.322	37.340	8		41.542	41.404	- 9
	42.832	42.826	8		235.110	234.91	9
	42.864	42.866	8		247.684	247.62	9
	42.959	42.950	8		249.920	249.85	9
	43.045	43.046	8		312.576	312.57	9
	43.330	43.329	8		339.469	339.58	9
	43.378	43,385	8	Co XIX	12.884	12.87	7
	46.653	46.662	8		12.970	12.99	7
	47.332	47.350	8		12.925	12.94	7
	47.447	47.453	8		13.063	13.09	7
	47.700	47.702	8		13.096	13.26	7
	49.030	48.991	8		13.194	13.13	7
	49.068	49.052	8		13.374	13.42	7
	49.200	49.181	8		14.173	14.17	7
Ca IV	325.704	329.12	10		14.425	14.42	7
	329.062	332.53	10		14.550	14.53	7
Sc XIII	24.241	24.28	7		14.627	14.59	7
	24.623	24.65	7				
	25.282	25.33	7				

TABLE V.- PUNCHED CARD FORMAT

FE18Q1633 • 1082S213000CS10000B43S23P214D3S23P215PGA3P* X3D* 12A2P*2A2P*2376487794

COLUMNS		15	INFORMATION
1	THRU		ELEMENT AND IONIZATION STAGE CONTAINS Q IF ANY DATA IS QUESTIONABLE. (SUSPECT CLASSIF- ICATION OF CLASSIFIED LINES. OTHERWISE.SUSPECT ION STAGE.)
6	THRU	14 15	WAVELENGTH OF LINE IN ANGSTROMS CONTAINS S IF LINE IS A STANDARD
16	THRU		
		22 23	CONTAINS C IF LINE IS CLASSIFIED CONTAINS S IF LINE IS A SOLAR LINE
24	THRU		LINE INTENSITY (VERY APPROXIMATE)
		29	CONTAINS VARIOUS LETTERS WHICH REPRESENT A DESCRIPTION OF THE LINE. (B=BLEND OF TWO LINES. D=DIFFUSE. F=FORBIDDEN.
			H=HAZY + P=PREDICTED WAVELENGTH + R=REVERSED + W=WIDE)
		30	LOG(BASE 10) OF LARGEST INTENSITY OF THE SCALE
31	THRU	39	LOWER QUANTUM CONFIGURATION
40	THRU	48	UPPER QUANTUM CONFIGURATION
		49	CONTAINS G IF LOWER TERM IS GROUND TERM
		50	CONTAINS A LETTER WHICH REPRESENTS SPECTRUM IDENTIFICATION UNDER AN OLD SYSTEM. IF THE LINE IS SO IDENTIFIED
æ •	THRU	E A	LOWER TERM
٥,	INKO	55	PART OF OLD SPECTRUM IDENTIFICATION SYSTEM
56	THRU	59	UPPER TERM
		60	TOTAL ANGULAR MOMENTUM OF LOWER TERM (J)
		61	TOTAL ANGULAR MOMENTUM OF UPPER TERM (J)
62	THRU	65	LOWER PARENT TERM
		66	TOTAL ANGULAR MOMENTUM OF LOWER PARENT TERM
67	THRU		UPPER PARENT TERM
		71	TOTAL ANGULAR MOMENTUM OF UPPER PARENT TERM
_	THRU		NUMBER OF REFERENCE FROM WHICH WAVELENGTH WAS OBTAINED
	THRU		NUMBER OF REFERENCE FROM WHICH INTENSITY WAS OBTAINED
78	THRU	80	NUMBER OF REFERENCE FROM WHICH CLASSIFICATION WAS OBTAINED

TABLE VI. - FLOW CHART

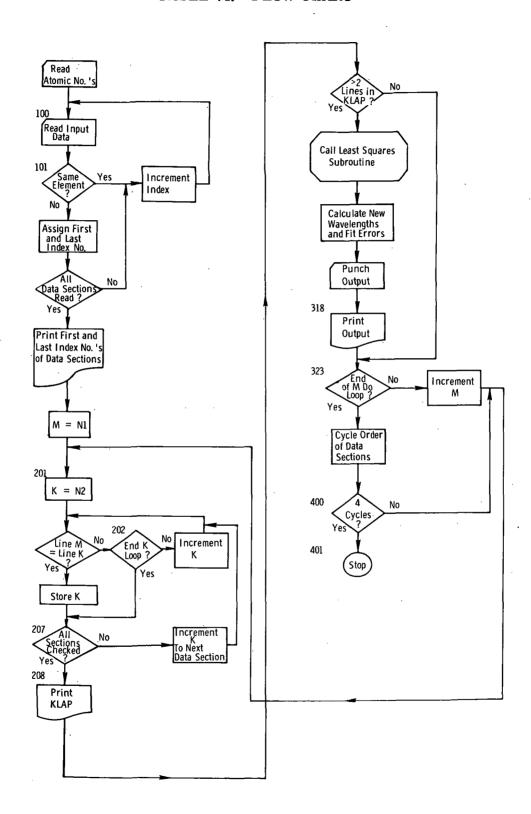


TABLE VII. - COMPUTER PROGRAM

```
PROGRAM SORT (INPUT.OUTPUT.PUNCH)
C THIS PROGRAM SORTS SPECTRAL EMISSION DATA INTO ISOELECTRONIC SEQUENCES
C AND CALCULATES WAVELENGTHS OF MISSING LINES IN THE SEQUENCES THAT
C CONTAIN THREE OR FOUR KNOWN WAVELENGTHS. CALCULATIONS ARE PERFORMED BY USE OF
C SECOND-DEGREE POLYNOMIALS WHICH BEST FIT THE RESPECTIVE SEQUENCES
C ACCORDING TO THE METHOD OF LEAST SQUARES.
       DATA IS COMPOSED OF ONE CARD CONTAINING ATOMIC NUMBERS OF FIVE
C SECTIONS OF KNOWN DATA FOLLOWED BY FIVE SECTIONS OF KNOWN DATA ON
C ISOELECTRONIC IONS FOLLOWED BY A BLANK CARD.
C C14= ELEMENT AND IONIZATION STAGE
C C5 = Q(DATA QUESTIONABLE, SUSPECT CLASS., IF CLASS., OR SUSPECT ION. ST.)
C C614= WAVELENGTH OF LINE
C C15= S (IF STANDARD LINE)
C M1621= MULTIPLET NUMBER
C C22= C (IF CLASSIFIED LINE)
C C23= S (IF SOLAR LINE)
C M2428= INTENSITY
C C29= INTENSITY MODIFIER
C M30= INTENSITY BASE
C C3139= LOWER CONFIGURATION
C C4048= UPPER CONFIGURATION
C C49= G (IF GROUND STATE)
C C5154= LOWER TERM
C C5659= UPPER TERM
C M60= LOWER J
C M61= UPPER J
C C6266= LOWER PARENT TERM
C C6771= UPPER PARENT TERM
C M7280= REFERENCES
      DIMENSION Y(5,1) ,X(5) ,W(5) ,RESID(5.1) ,SUM(1) ,A(3.3) ,B(3.1),
     1 C(5,3) ,AL(5),DEV(5),PRED(5).ZO(5)
     2.0ST1(5).0ST2(5).0ST3(5).0ST4(5).0ST5(5)
      DIMENSION C14(600),C5(600),C614(600),C15(600),M1621(600),C22(600),
     1C23(600), M2428(600), C29(600), M30(600), C3139(600), C4048(600),
     2C49(600),C5154(600),C5659(600),M60(600),M61(600),C6266(600),
     3C6771(600), M7280(600), KLAP(5), AUXL(5)
C STATEMENTS 100-110 READ DATA AND INDEXES FIRST AND LAST CARDS OF EACH ELEMENT
      READ 8,(21,22,23,24,25)
    8 FORMAT(5F5.0)
      ZMIN=Z1
      NA=0 $ NB=0 $ NC=0 $ ND=0 $ NE=0
      I=1
  100 READ 1,C14(I),C5(I),C614(I),C15(I),M1621(I),C22(I),C23(I),
     1M2428(I),C29(I),M30(I),C3139(I),C4048(I),C49(I),C5154(I),C5659(I),
     2M60(I), M61(I), C6266(I), C6771(I), M7280(I)
    1 FORMAT(A4,A1,F9.4,A1,I6,A1,A1,I5,A1,I1,A9,A9,A1,1X,A4,1X,A4,A1,A1,
     145,45,19)
      IF(I.EQ.1) GO TO 110
  101 IF(C14(I).EQ.C14(I-1))GO TO 110
C HERE THRU 110 INDEXES 1ST AND LAST CARD OF EACH ELEMENT
      IF (NA. EQ. 0) GO TO 102
      IF (NB. EQ. 0) GO TO 103
      IF(NC.EQ.0)G0 TO 104
      IF(ND.EQ.0)GC TO 105
      NE = I-1
              $ GO TO 112
  102 NA=I-1 $ N2=I $ N1=1 $ GO TO 110
  103 NB=I-1 $ N3=I $ GO TO 110
  104 NC=I-1 $ N4=I $ GO TO 110
  105 ND=I-1 $ N5=I $ GO TO 110
  110 I=I+1 $ GO TO 100
  112 NEF=NE $ BLANK=10H
```

TABLE VII. - COMPUTER PROGRAM - Continued

```
PRINT 5, N1, NA, N2, NB, N3, NC, N4, ND, N5, NE
    5 FORMAT(22H1DATA SECTIONS INDICES, 215, 4(1H,, 215)///)
C STATEMENTS 200-207 CORRELATE EACH LINE OF ONE ELEMENT WITH ISOELECT.
C LINES OF OTHER FOUR ELEMENTS
  200 ITOP=N1 $ IBOT=NA
      DO 323 M=ITOP, IBOT
      KLAP(1)=M $ KLAP(2)=0 $ KLAP(3)=0 $ KLAP(4)=0 $ KLAP(5)=0
      JTOP=N2 $ JBOT=NB $ IND=2
  201 DO 202 K=JTOP, JBOT
      IF(C3139(M).NE.C3139(K)) GO TO 202
      IF(C4048(M).NE.C4048(K)) GO TO 202
      IF(C5154(M).NE.C5154(K)) GD TD 202
      IF(C5659(M).NE.C5659(K)) GO TO 202
      IF(M60(M).NE.M60(K)) GO TO 202
      IF (M61(M).NE.M61(K))GO TO 202
  212 IF(C6266(M).EQ.BLANK.DR.C6266(K).EQ.BLANK)GO TO 210
      IF(C6266(M).NE.C6266(K))GO TO 202
  210 IF(C6771(M).EQ.BLANK.OR.C6771(K).EQ.BLANK)GO TO 203
      IF(C6771(M).EQ.C6771(K))GO. TO 203
  202 CONTINUE
      GO TO 207
  203 C3139(K)=FLOAT(K)
      KLAP(IND)=K
  207 IF(IND.EQ.5)GO TO 208
      IND=IND+1
C HERE THRU 206 CHANGES LIMITS OF K
      IF(JTOP.EQ.N2)GO TO 204
      IF(JTOP. EQ.N3)GO TO 205
      IF (JTOP-EQ-N4)GO TO 206
      IF(JTOP.EQ.N5)GO TO 208
  204 JTOP=N3 $ JBOT=NC $ GO TO 201
  205 JTOP=N4 $ JBCT=ND $ GO TO 201
206 JTOP=N5 $ JBOT=NE $ GO TO 201
C IF THERE ARE THREE OR MORE ISOELEC. LINES, THEY ARE FIT TO A 2ND ORDER POLYN..
C POLYN. DEV. FROM TAB. LINES IS CALC. AND NEW LINES PREDICTED
  208 PRINT 6, (KLAP(MO), MO=1,5)
    6 FORMAT(10X,515)
      ISUM=0
      DO 209 MN=1,5
      IF(KLAP(MN).GT.O)ISUM=ISUM+1
  209 CONTINUE
      IF(ISUM.GT.2)GO TO 300
      GO TO 323
 C614=KNOWN LAMDAS X=NUCLEAR CHARGE ISUM=NO. OF KNOWN LAMDAS 300 NU=1 $ X(1)=0. $ X(2)=0. $ X(3)=0. $ X(4)=0. $ X(5)=0.
      ZO(1)=0. $ ZO(2)=0. $ ZO(3)=0. $ ZO(4)=0. $ ZO(5)=0.
      DO 306 JK=1,5
      IF (KLAP(JK).EQ.O)GO TO 306
      KL=KLAP(JK)
      Y(NU,1)=1./C614(KL)
      IF(KL.LE.NA.AND.KL.GE.N1)GD TO 301
      IF(KL.LE.NB.AND.KL.GE.N2)GO TO 302
      IF (KL.LE.NC. AND.KL.GE. N3)GO TO 303
      IF(KL.LE.ND.AND.KL.GE.N4)GO TO 304
      X(NU)=25 $ ZO(JK)=25 $ GO TO 305
 301 X(NU)=Z1 $ ZO(JK)=Z1 $ GO TO 305
 302 X(NU)=Z2 $ ZO(JK)=Z2 $ GO TO 305
303 X(NU)=Z3 $ ZO(JK)=Z3 $ GO TO 305
  304 X(NU)=Z4 $ ZO(JK)=Z4
```

TABLE VII. - COMPUTER PROGRAM -- Continued

```
305 W(NU)=1.
    NU = NU + 1
306 CONTINUE
    CALL LSCPOL(X,Y,W,RESID,ISUM,SUM,1,A,B,3,C,5,3)
    DO 314 I=1,5
    IF(ZO(I).LT.ZMIN)GO TO 312
    AL(I)=1./(B(1,1)+B(2,1)+ZO(I)+B(3,1)+ZO(I)++2)
    KL=KLAP(I)
    DEV(I)=AL(I)-C614(KL)
    GO TO 314
312 AL(I)=0177700000000000000000
    DEV(I)=C177700000000000000000
314 CONTINUE
    DO 317 J=1.5
    IF(ZO(J).GE.ZMIN)GO TO 316
    IF(J_{\bullet}EQ_{\bullet}1)ZO(J)=Z1
    IF(J.EQ.2)ZO(J)=Z2
    IF(J.EQ.3)ZO(J)=Z3
    IF (J.EQ.4) ZO(J)=Z4
    IF(J.EQ.5)ZO(J)=Z5
315 PRED(J)=1./(B(1.1)+B(2.1)*ZO(J)+B(3.1)*ZO(J)**2)
    GO TO 317
316 PRED(J)=017770000000000000000
317 CONTINUE
                              $ QST1(3)=1H $ QST1(4)=1H
                                                             $QST1(5)=1H
    QST1(1)=1H
                $ QST1(2)≈1H
    QST2(1)=1H $ QST2(2)=1H
                               $ QST2(3)=1H
                                              $ QST2(4)=1H
                                                             $QST2(5)=1H
                                              $ QST3(4)=1H
    OST3(1)=1H
                $ QST3(2)=1H
                               $ QST3(3)=1H
                                                             $QST3(5)=1H
    QST4(1)=1H
                $ QST4(2)=1H
                              $ QST4(3)=1H
                                              $ GST4(4)=1H
                                                             $QST4(5)=1H
                                              $ QST5(4)=1H
                                                            $QST5(5)=1H
    OST5(1)=1H
                $ OST5(21=1H
                              $ QST5(3)=1H
    DO 322 IN=1,5
    KL=KLAP(IN) $ K1=KLAP(1)
    IF(KL.EQ.0)G0 TO 307
    IF (C5 (KL). EQ.1HQ)OST1(IN)=2HQ.
    IF(M60(KL).EQ.O)QST2(IN)=3HLJ.
    IF(M61(KL).EC.O)QST3(IN)=3HUJ.
    IF(C6266(KL).EQ.BLANK)OST4(IN)=3HLP.
    IF (C6771 (KL). EC. BL ANK) QST5 (IN) = 3HUP.
    KC=KL $ AUXL(IN)=C614(KL) $ GO TO 308
307 IF(IN.EQ.1)KC=N1
    IF (IN. EQ. 21KC=N2
    IF(IN.EQ.3)KC=N3
    IF(IN.EQ.4)KC=N4
    IF(IN.EQ.5)KC=N5
    M2428(KC)=017770000000000000000
    AUXL(IN)=0177700000000000000000
    PUNCH 9, (C14(KC), PRED(IN), C3139(K1), C4048(K1), C49(K1), C5154(K1),
   1C5659(K1), M60(K1), M61(K1), C6266(K1), C6771(K1))
  9 FORMAT(A4,1X,F9.4,16X,2A9,A1,1X,A4,1X,A4,2A1,2A5)
308 CONTINUE
    IF (IN.GT.1)GD TD 320
    PRINT 113
113 FORMAT(8HOELEMENT, 8X,14HQUANTUM STATES,21X,1HZ,3X,9HTAB. LINE,
   15x,10HPRED. LINE,6x,9HLINE DEV.,4x,9HINTENSITY,4x,12HQUESTIGNABLE)
318 PRINT 319, (C14(KC), C3139(KL), C4048(KL), C5154(KL), C5659(KL),
1M60(KL),M61(KL),ZO(IN),AUXL(IN),PRED(IN),DEV(IN),M2428(KC).
   2C29(KC), QST1(IN), QST2(IN), QST3(IN), QST4(IN), QST5(IN))
319 FORMAT(2X,A4,3X,2A9 ,2X,2A4,2X,2A1,8X,F3,0,3X,F9,4,5X,F9,4,
   16X,F9.5,5X,I4,A1,6X,5A4)
  GO TO 322
```

TABLE VII. - COMPUTER PROGRAM - Concluded

```
320 PRINT 321, (C14(KC), ZO(IN), AUXL(IN), PRED(IN), DEV(IN), M2428(KC),
     1C29(KC),QST1(IN),QST2(IN),QST3(IN),QST4(IN),QST5(IN))
  321 FORMAT (2X, A4, 43X, F3, 0, 3X, F9, 4, 5X, F9, 4, 6X, F9, 5, 5X, I4, A1, 6X, 5A4)
  322 CONTINUE
      PRINT 7
    7 FORMAT(1H0)
  323 CONTINUE
C STATEMENTS BEGINNING AT 400 CYCLE PREVIOUS ELEMENT CRDER FOR ANOTHER
C PASS THRU THE PROGRAM (UNTIL THERE HAVE BEEN 5 PASSES)
  400 IF (NEF. EQ. IBOT )GO TO 401
      TEMP1=N1 $ TEMP2=NA $ TEMP3=Z1
              $ NA=NB
                          $ Z1=Z2
      N1=N2
      N2=N3
               $ NB=NC
                          $ Z2=Z3
      N3=N4
              S NC=ND
                         $ 23=24
      N4=N5
               $ ND=NE
                          $ 24=25
      N5=TEMP1 $ NE=TEMP2 $ Z5=TEMP3
      GO TO 200
  401 STOP
      END
```

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